

# **\*\*\*DRAFT\*\*\***

## **Allotment Management Plan**

Campbell-Loope S&G

Carson Ranger District

Humboldt-Toiyabe National Forest

Prepared by: \_\_\_\_\_ Date: \_\_\_\_\_  
**Rangeland Management Specialist**

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_  
**Grazing Permittee**

This Allotment Management Plan implements direction established in the 1986 Toiyabe National Forest Land and Resource Management Plan, as amended by the Sierra Nevada Forest Plan Amendment (2001 and 2004), and the Greater Sage Grouse Bi-State Distinct Population Segment Forest Plan Amendment (2016), and the 2020 FONSI and Decision Notice for the Leviathan-Loope Rangeland Project. This Allotment Management Plan is made part of your Term Grazing Permit in accordance with Section 8(a) Part 2 of that permit.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

## Introduction

The Campbell-Loope S&G Allotment is located toward the lower end of the west side of Monitor Pass and stretches west across Highway 89 and Highway 4 to encompass much of the Poor Boy area as well as a small section of the Mokelumne Wilderness. The allotment is located entirely in Alpine County, California and includes almost all National Forest System Lands. The legal description for this allotment is: T9N, R19E, Section 25; T9N, R20E, Sections 1-21, 30; T10N, R20E, Sections 13, 23-28, 33-36; T10N, R21E, Sections 19, 20, 21, 27-34; and T9N, R21E, Sections 4 and 6, Mount Diablo Meridian. The Bridgeport Ranger District currently administers this allotment. This is the second Forest Service Allotment Management Plan for the Campbell-Loope Allotment (first in 1976). The Campbell-Loope Allotment totals approximately 15,093 acres. The remaining acres are comprised of private and BLM lands. A single permittee has held the permit for the allotment for approximately forty years. The allotment boundary is shown on Map 1.

A 17,790-acre lightning-caused wildfire started on June 19, 2015 and was managed by a Type 2 Great Basin Management Team until July 5, 2015. The fire was not 100% extinguished and continued to burn through October (mostly in stumps). Approximately 6,570 acres within the Campbell-Loope Allotment burned. The fire consumed a large portion of the east side of the allotment, which has historically been the most utilized and capable portion of the allotment. There was 100% conifer consumption from highway 89, and north up the Loope Canyon road. The fire burned in mixed conifer forest in higher elevations (white fir and Jeffrey pine, Cedar), as well as the Pinyon-Juniper. It also consumed cottonwood, aspen, and mountain mahogany stands. Pinyon-Juniper was also present in the lower elevations. However, several riparian and aspen stands were minimally impacted along the Loope Canyon road because they were saturated at the time. The fire appeared to slow down once it reached an elevation of 7,500 feet and hit the sagebrush where it gradually burned out. There are burned mahogany and sagebrush skeletons throughout the lower portions of the allotment. The lower elevations within Goskey Canyon were highly impacted by the fire, but overall, the higher elevations and sagebrush should benefit over time from the burn. The Herder Spring water development on Loope Canyon Road was impacted by the fire-approximately 35 ft. of the 1¼" poly pipe melted. The pipe is used to transport water from the west side of the road at the spring to the east side of the road at the troughs. Range staff replaced the water pipe and removed the debris- no additional repair is required.

There is a substantial cheatgrass crop along the system roads within the allotment. A significant amount of rain produced flooding and erosion throughout the burn area. In general, the very steep topography is prone to soil erosion within the allotment. Natural erosion will continue, as it has, especially during torrential thunderstorm events. The timing and low to moderate burn severity of the fire (due to being wind-driven), along with the substantial amount of precipitation post-fire, aided in the almost instantaneous re-growth of the natural vegetation. Squirreltail, grass-like, aspen, mahogany, lupine, balsamroot, wild rose, rabbit brush, and even sagebrush were re-growing in the burned area- particularly within the Campbell-Loope Allotment. According to the Forest Plan, total rest from livestock grazing will occur for 2 years post-fire. The allotment was rested from livestock grazing for the 2015 and 2016 grazing seasons. Grazing resumed in 2017 with avoidance areas such as the aspen stands.

## Condition

Based on recent ecological monitoring, vegetation communities within the allotment are currently at a functioning-at-risk condition. Meadow systems yield a disproportionate amount of early

seral stage plants and a high amount of bare ground that support the condition rating. Riparian areas show a stable to downward trend/apparent trend. Aspen communities show an apparent stable trend; and upland communities show a stable trend/apparent trend.

### Summary of Current Vegetation Conditions

Ecological condition for each dominant vegetation type across the Campbell-Loope Allotment:

- Meadow systems are functioning-at-risk.
- Upland vegetation communities are functioning-at-risk.
- Aspen communities are functioning-at-risk.
- Woody riparian/Stream systems are functioning.
- Mountain brush communities are functioning-at-risk.
- Mountain mahogany communities are functioning.
- Mixed conifer stands are functioning-at-risk.
- Noxious weeds are minimal.

**Table 1: Acres of Community Types within the Campbell-Loope Allotment.**

Allotment	Pinyon-Juniper	Conifer Forest/Woodland	Riparian	Aspen/Cottonwood	Upland				
					Sagebrush	Mountain brush & Mixed Scrub	Mountain Mahogany	Mixed Sage/Bitterbrush	Grassland
<b>Campbell-Loope S&amp;G</b>	1,410.8	6,668.2	64.7	48.4	4,511.6	1,867.9	609.5	2,056.8	79.2
<b>% of Allotment</b>	8%	39%	<1%	<1%	26%	11%	4%	12%	<1%

### Goals & Objectives and Desired Future Conditions

Livestock grazing will be authorized in a manner that will meet or move toward the following resource objective(s) and desired conditions in a timely manner. Desired conditions set forth in the land and resource management plan specific to livestock grazing and rangeland resources are: Goals for each resource are stated in broad, general terms looking from the present into the future. The desired future condition is stated as how the Forest should appear in the year 2030 if implementation of the Plan is properly achieved. (p. IV-1)

Management requirements necessary for achieving goals and objectives are referred to as “standards and guidelines.” These state the bounds or constraints within which management practices will be performed. Within this document, the terms “standard” and guideline” are interchangeable with no difference in meaning. The Forest-wide standards and guidelines described in the following section were developed to address public issues and management concerns; and to direct management practices in order to accomplish Forest-wide goals and objectives. (p. IV-13)

## Forest Plan Standards and Guidelines

Within the framework of the Toiyabe Forest Land and Resource Management Plan (1986) as amended, it is the desired future condition of the Forest and the District to:

- **USDA 1986 IV-26-27** -Achieve or maintain rangeland in satisfactory condition which is defined as: (1) having a resource value rating (RVR) of 50 or above for vegetation or other features; or (2) being in a mid-succession or higher class of ecological status; and (3) having a stable or upward trend in soil and vegetation.
- **USDA 1986 IV-26-** Have approved allotment management plans that incorporate objectives and guidelines to improve coordination with other resources;
- **USDA 1986 IV-26-** Strengthen the noxious weed control effort; and
- **USDA 1986 IV-26-** Provide forage for livestock production.
- **USDA 1986 IV-26-** Strive to achieve or maintain a minimum of 60 percent ground cover on upland rangelands with the exceptions of low sagebrush types, Wyoming big sagebrush types, crested wheatgrass seedings, pinyon/juniper types, and south facing sagebrush types on granitic slopes of the Sierra Nevada.
- **USDA 1986 IV-27-** Implement non-continuous use management systems on all livestock grazing allotments. When feasible, use a rest rotation system when significant range is in unsatisfactory condition.
- **USDA 1986 IV-26-** Conduct monitoring and evaluation in accordance with FSH 2209.21, Range Environmental Analysis Handbook, and the Nevada Rangeland Monitoring Handbook.
- **USDA 1986 IV-28-29-** Forage Utilization Standards obtained from the 1986 Forest Plan are to be used as maximum standards for the development of proper use criteria. In 2001 and 2004, the Sierra Nevada Forest Plan amended the Toiyabe Plan and provided new grazing standards for riparian areas. Design of management systems will include the specific utilization standards to be applied. These standards should be applied based on utilization of key plant species by key area. Soil disturbance may also be used to determine proper use and is often the best measure of proper use on sheep ranges and on granitic slopes.
- **USDA 1986 IV-30-** Proper use criteria will be established, in writing, for each unit of each grazing allotment. Proper use criteria are a mandatory part of each allotment management plan. Long-term trend studies are also mandatory to determine if proper use criteria are correct and to determine what is occurring in regard to range condition. Establishing proper use criteria requires Interdisciplinary (ID) team involvement. Proper use criteria define the permissible grazing level in the range unit or pasture.

## Sierra Nevada Forest Plan Amendments

The Toiyabe Forest Plan was amended by the Sierra Nevada Forest Plan Amendment (SNFPA) in 2001 and 2004 and includes additional direction related to desired conditions and livestock grazing within Riparian Conservation Areas (RCAs). Riparian Conservation areas are land

allocations that are managed to maintain or restore the function of aquatic, riparian and meadow ecosystems (USDA 2001 ROD pp. A-7). RCAs generally include all vegetation within 300 feet of the bank full edge of a perennial stream and 150 feet from seasonally flowing streams.

**USDA 2004 ROD pp42-** Desired conditions for meadows within RCAs include maintaining the “ecological status of meadow vegetation in late seral condition” (50 percent or more of the relative cover of the herbaceous layer is late seral with high similarity to the potential natural community). Management direction related to meeting the desired condition includes the following Riparian Conservation Objectives (RCO):

**USDA 2004-RCO #5-120, pp. 65-** The SNFPA sets maximum utilization levels on forage use in meadows based on the grazing system being used on the allotment. For season-long grazing on meadows in early seral status, the SNFPA limits livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height). If the meadows are in late seral status livestock utilization of grass and grass-like plants is limited to a maximum of 40 percent (or minimum 4-inch stubble height). Ecological status is to be determined by using Regional ecological scorecards and range plant list in regional range handbooks. If meadow ecological status is determined to be moving in a downward trend, grazing is to be modified or suspended.

**USDA 2004-RCO #5-120, pp. 65-** Under intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows require total rest from grazing until they have recovered and have moved to mid- or late seral status. Degraded meadows are defined as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion.

**USDA 2004-RCO #5-121, pp. 65-** Browsing is limited to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Livestock are to be removed from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation.

**USDA 2004-RCO #2-103 pp. 63-** Prevent disturbance to streambanks and natural lake and pond shorelines from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots.

## **Greater Sage-grouse Bi-State Distinct Population Segment Forest Plan Amendment**

Additional direction related to the desired habitat conditions and livestock management/grazing within the Bi-State Sage Grouse Distinct Population Segment (DPS) are outlined in the Greater Sage-grouse Bi-state DPS Forest Plan Amendment and Record of Decision. Desired conditions, and goals and objectives will be incorporated into the management of the Leviathan and Campbell-Loope Allotments. Grazing permits will include the standards and guidelines to include terms, conditions, and direction to move toward or maintain sage grouse habitat desired conditions. The allotments include lands within the Pinenut Population Management Unit. Management direction related to livestock grazing and sage grouse habitat management are as follows:

**RP-S-01:** Grazing permits, annual operating instructions, or other appropriate mechanism for livestock management shall include terms, conditions, and direction to move toward or maintain bi-state DPS habitat desired conditions.

**RP-G-01:** In bi-state DPS habitat, consider closure of grazing allotments, pastures, or portions of pastures, or managing the allotment as a forage reserve as consistent with maintaining sage-grouse habitat based on desired conditions as opportunities arise under applicable regulations, where removal of livestock grazing would enhance the ability to achieve desired bi-state DPS habitat conditions.

**RU-S-01:** Manage livestock grazing to maintain residual cover of herbaceous vegetation so as to reduce predation during breeding/nesting season (March 1 to June 30 critical disturbance period; dates may shift 2 weeks back or forward in atypically dry or wet years based on observations of breeding/nesting activity).

**RU-S-02:** Manage livestock grazing in accordance with the utilization standards in this table.

Community Type	Percent Utilization of Key Species	Terms and Conditions
<b>Mountain Big Sagebrush</b>	<45% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Wyoming and Basin Big Sagebrush</b>	<35% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Black Sagebrush</b>	<35% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Riparian and Wet Meadows</b>	<50% herbaceous species; <35% woody species (current year's growth); or average stubble height of at least 4 to 6 inches (depending on site capability and potential) for herbaceous riparian vegetation	Average stubble height 4 to 6 inches: Livestock removed in 5 days of reaching utilization level based on site; or (sequential action) no grazing from May 15 to August 30 in brood-rearing habitat

Table 2.

## Allotment Management

### Design Features

The Decision Notice for the Leviathan-Loope Rangeland Project included additional design features for resources specific to the Campbell-Loope Allotment and are incorporated into the management of this allotment:

### *Soil and Watershed Resources*

- Avoid impacts to fragile riparian soils and vegetation, no bedding, resting or

other concentrated livestock use would occur within .25 miles (440 yards) of a stream or other waterbody.

- Ground disturbing work such as digging soil to improve water developments, will occur in the fall, or when spring flows are low, and soils are dry and more durable.
- Development or improvement work at spring sites will be monitored by resource specialists to prevent undesirable impacts to resource values.

### ***Wildlife and Aquatic Resources***

- A portion of the project area is located within the Pine Nut Population Management Unit (PMU) for Bi-state Sage Grouse and proposed critical habitat for bi-state sage grouse. There is no known nesting or lekking sites within or near the project area. As part of the Proposed Action, all pertinent standards and guidelines as described in the Record of Decision for the Greater Sage-grouse Bi-state Distinct Population Segment Forest Plan Amendment (USDA 2016) will be followed to continue to attain desired habitat conditions for Bi-state sage grouse.
- All water developments will be designed and fitted with wildlife escape ramps that meet Bat Conservation International Standards (Taylor and Tuttle 2007).

### ***Sensitive and Rare Plants***

- Unoccupied potential habitat for rare plant species was discovered in the project area during surveys. If rare plants are documented in the project area in the future, plants will need to be flagged and avoided or otherwise protected as determined by the district or forest botanist.

### ***Noxious/Invasive Weeds***

- To avoid inadvertently transporting noxious weeds to other locations, livestock will not be authorized to graze or trail through known noxious or invasive weed populations.
- The permittees will be responsible for coordinating with the Forest Service immediately when new infestations of noxious or invasive weeds are discovered on their allotment.
- Equipment used to install or maintain water developments would be thoroughly cleaned prior to entering National Forest System lands to avoid inadvertent transport of noxious and invasive weed seeds.
- As per the Noxious Weed Order 36 CFR 261.58(t)/regional order 04-00-097, any hay that is brought onto the National Forest will be federally certified “Noxious Weed Free Forage.”
- Prior to arrival to the project area, sheep will either be quarantined, or fed weed free forage for at least 3 days.
- As part of the Carson Ranger District Weed Management Program, weed infestations located in the Leviathan-Loope Rangeland Project area will be mapped and treated on an annual basis.

## ***Cultural Resources***

- The AOI shall be reviewed to determine if additional cultural resource inventory is needed, and to ensure that cultural resource concerns are conveyed.
- Cultural resources near high use areas (watering and bedding locations) shall be monitored on a periodic basis to ensure standard resource protection measures are effective.
- If adverse effects to sites eligible or potentially eligible for inclusion in the National Register of Historic Places are identified in the future, additional protection measures will be required to prevent additional impacts.
- *Additional direction will be incorporated into this AMP once the Decision Notice is signed.*

## ***Recreation***

- To minimize potential impacts to recreation, when feasible, sheep crossing the East Fork Carson River will be limited to weekdays as well as avoid federal and state holidays when recreation use is typically greater.
- To minimize potential impacts to roadless characteristics, when feasible, maintenance activities on the Poor Boy spring/troughs will be limited to weekdays, as well as avoid federal and state holidays when recreation use is typically greater.

## **Permitted Head Months and Season of Use**

The definition of a head month is the use and occupancy of the range by one animal for one month. For grazing fee purposes, it is a month's use and occupancy of range by 5 sheep or goats (FSM 2230.5).

Table 3 displays the maximum occupancy based on the capacity (foraging) of rangelands within the allotment. In addition to managing grazing intensity and duration on allotment, establishing maximum occupancy with parameters will allow for greater flexibility in achieving short-term and long-term management objectives.

A maximum number of head months were analyzed and established in the Leviathan-Loope Rangeland Project. The Term Grazing Permit permits the maximum head months, or greatest amount of use that would be authorized on the Campbell-Loope Allotment; however, because ecological conditions on most of the allotment are currently considered unsatisfactory (functioning-at-risk), the maximum of 3,038 head months would only be used when it is determined appropriate to meet the desired ecological conditions of the allotment. Stocking rates will be re-evaluated annually and adjusted when necessary to meet the desired ecological conditions and management objectives of this allotment. On average, use has consisted of 1,100 dry ewes for 3 weeks with the majority of grazing activity occurring on the portion of the allotment east of the East Fork Carson River (Mogul and Lexington Units). Actual use data collected from 2011-2019 indicated an average of 1,149 head months for 28 days.

The season of use dates would be permitted from May 15 to October 31 with the typical grazing season lasting one to two months. However, the actual grazing season would be determined annually based on range readiness conditions (i.e. weather, soil, vegetation) and within season utilization monitoring. To account for these seasonal fluctuations, seasons of use represent the earliest and latest allowable dates for livestock to be on the allotments.



**Table 3: Permitted Use in Term Grazing Permit 2020.**

Livestock			Period of Use		Grazing Allotment
Number	Kind	Class	From	To	
3,038 HM	Sheep	Dry Ewes	5/15	10/31	Campbell-Loope S&G

\*Grazing may occur within the range of May 15 through October 31, not to exceed 3,038 head months, with a maximum of 56 days grazed.

## Grazing Management Strategies, Standards and Guidelines

Grazing management for this allotment will consist of a deferred grazing strategy with periodic rest. This type of grazing system allows for the most efficient and non-impactive use of rangelands as pastures (or units) are rested for either a year or more at a time or deferred until the appropriate season for the plant community. The allotment consists of three grazing units; however, grazing will continue at a reduced level until all water developments are properly functioning, and vegetation (including aspen) has re-established following the wildfire. The sheep may graze the allotment in a clockwise pattern one year and counterclockwise the next. Proper season of use will be directed at matching the timing of livestock grazing with the kind of plant community on the allotment, taking into consideration the long-term objectives for the range. Adjusting the season of use on pastures will allow plant species to be grazed at different phenological stages instead of being grazed at the same time every year. Grazing will continue at a reduced level (proper use criteria) until all water developments are properly functioning and the ecological condition is determined to be stable or on an upward trend. The tentative rotation schedule is show in Tables 4 and 5.

**Table 4: Tentative Grazing Plan for 2020.**

Unit	On Date	Off Date	Days Use	Head Months	AUMs
Lexington	8/16/20	Until utilization has been met			
Mogul		10/3/20	49	2,658	532
Indian	REST	REST	N/A	N/A	N/A
<b>Total</b>			49	2,658	532

\*1650 dry ewes NTE 3,038 head months and 56 days

**Table 5: Tentative Grazing Plan for 2021.**

Unit	On Date	Off Date	Days Use	Head Months	AUMs
Lexington	Graze Second				
Mogul	Graze First				
Indian					
<b>Total</b>					

\*Grazing may occur within the range of May 15 through October 31, not to exceed 3,038 head months, with a maximum of 56 days grazed.

**The Leviathan-Loope Rangeland Project EA and Decision Notice consists of the following actions for the management of the Campbell-Loope Allotment:**

1. Seasons of use may vary between May 15<sup>th</sup> and October 31<sup>st</sup>.
2. Permitted Use is not to exceed 3,038 head months, and/or not to exceed a maximum of 56 days grazed.
3. Dry ewes may be substituted for ewes with lambs at a conversion factor based on their weight at time of entry to the allotment (based on one AUM being equal to the forage requirement of a 125-pound ewe with a lamb less than 6 months of age).
4. Annual grazing strategies will be designed to incorporate one or more of the following guidelines:
  - No grazing in any one pasture or area twice in the same season
  - Vary the time of year livestock are in any one unit or area over several years
  - Provide periodic rest when needed
  - Limit the amount of time sheep spends in any area so as to minimize impacts
  - Provide adequate time for plant growth prior to grazing.
5. The allotment will be grazed using open herding in a once over pattern.
6. Salt/mineral tubs must be placed at least ¼ mile from water, meadows, trails, and roads used by the public. Salt will be removed from the allotment when sheep have left an area.
7. Herder's camp must always be kept clean.
8. All garbage and debris associated with managing sheep must be removed.
9. Dead livestock must be moved at least 100 yards from any campsite, live stream, spring, trail, or road.
10. Time spent in an area may vary depending on when utilization standards are met. It is the permittee's responsibility to monitor the utilization and move the sheep before standards are exceeded.
11. When selecting sheep bedding areas, look for the following areas:
  - a. Densely forested areas.
  - b. Rocky areas.
  - c. The toe slope of a hill: rocky, barren areas.
  - d. Sheep will not bed or noon in aspen stands or more than 3 days in the same place during the grazing season.
  - e. See design feature for soils and watershed resources above.

**Additional BMP's for Noxious Weed Prevention and Control Practices**

1. For grazing allotments with existing invasive plant/noxious weed infestations, the annual operating instructions should include practices for preventing spread and for cooperative management of weeds. Prevention practices may include, but are not limited to:
  - a. Altering season of use
  - b. Exclusion
  - c. Activities to minimize ground disturbance
  - d. Preventing weed seed transportation

- e. Maintaining healthy vegetation
  - f. Weed control methods
  - g. Revegetation
  - h. Inspection
  - i. Reporting
  - j. Education
2. Avoid or remove sources of invasive plant/noxious weed propagules to prevent new infestations and the spread of existing infestations. The following prevention practices may minimize transport of seed and other propagules into and within the allotment.
    - a. In units with existing weed infestations which are known to be susceptible to spread by livestock, schedule livestock use before seed-set or after seed has fallen.
    - b. If livestock are transported from a weed-infested area, annually inspect and treat allotment entry units for new weed infestations.
    - c. If pastures are infested to the degree that livestock grazing will either exacerbate the condition or contribute to weed seed spread, close pastures to livestock grazing. Designate those pastures as unsuitable range until weed infestations are controlled.
  3. Maintain healthy, desirable vegetation that is resistant to weed establishment.
    - a. Through the annual operating instructions, manage the timing, intensity, duration, and frequency of livestock activities to maintain the vigor of desirable plant species and retain live plant cover and litter.
    - b. Manage livestock grazing on restoration areas to ensure that vegetation is well established. This may involve exclusion for a period of time consistent with site objectives and conditions. Consider practices to minimize wildlife grazing on the areas if needed.
  4. Minimize disturbed ground conditions favorable for weed establishment.
    - a. Equipment used (including backhoe and trucks) to maintain and construct water developments must be thoroughly washed prior to entering the allotment and washed again prior to taking the equipment to another area within the allotment.
    - b. Consider, for example, changes in the timing, intensity, duration, or frequency of livestock use; placement and occasional relocation of salt grounds; restoration or protection of watering sites; and restoration of bedding grounds, and other areas of concentrated livestock use.
    - c. Inspect known areas of concentrated livestock use, e.g., watering and bedding sites, for weed invasion. Inventory and manage new infestations.
  5. Improve effectiveness of weed prevention practices through awareness programs and education. Promote weed awareness and prevention efforts among range permittees.
    - a. Use education programs or annual operating instructions to increase weed awareness and prevent weed spread associated with livestock management practices.
    - b. To aid in their participation in allotment weed control programs, encourage permittees to become certified pesticide use applicators and provide herbicide and mapping assistance when appropriate.

## **Forage Utilization and Proper Use Criteria**

### **Allowable Use and Other Standards:**

Actual moves within the allotment are to be completed by the time that:

- a) The allowable use standard is reached on any of the key areas, or
- b) The scheduled off date occurs, whichever occurs first.
- c) In the case of more than one standard being applicable to a given area, the standard being reached first will dictate a move.

This will usually necessitate moving livestock one or more days prior to reaching the allowable use standard or the scheduled off date. Any livestock use occurring after the scheduled off date must be approved in advance by the Forest Officer and will be based on an estimate of forage remaining and the grazing extension checklist until allowable use standards are reached.

Proper use criteria are guides for managing livestock movement and for assessing forage use at the end of growing season. The assessment of proper use criteria determines if grazing maintains resources in an appropriate ecological condition for moving toward objectives. The proper use criteria are designed to manage livestock grazing at levels that would move the resources towards the desired conditions. The proper use criteria are not desired conditions, they are measurable limits on grazing that would allow the landscape features to meet or move towards desired conditions.

In general, the highest proper use rates for each habitat group are assigned to areas that are in functioning condition (Tables 6 and 7). Proper use at these levels is expected to maintain or move these areas toward functioning condition. Proper use rates for habitat groups that are in functioning-at-risk or non-functioning condition are lower than the functioning category. Proper use under these rates is expected to allow these habitat groups to move toward and become functioning.

Proper use criteria for the Campbell-Loope Allotment was established based upon the most current information available regarding the conditions and trends of resources. Proper use criteria are based on Forest Plan established standards as amended, as well as review of scientific literature on grazing and its effect on vegetation under conditions (Leviathan-Loope Rangeland Project 2020). In general, the proper use criteria have been adjusted to more appropriately reflect levels of use that would protect resources and ensure stable and upward trends in vegetation and stream conditions. Proper use criteria would be re-evaluated and adjusted (if necessary) to the appropriate level to meet resource objectives. As displayed in table 6 and table 7 utilization levels are adjusted depending on the ecological condition of the range (non-functioning, functioning-at-risk, functioning). For example, if ecological conditions improve to satisfactory in upland shrubs (with the exception of BSSG requirements), utilization rates may be increased. Likewise, if conditions deteriorate, utilization levels would be lowered. Utilization measurements would be based on within-season triggers and end of the growing season conditions, and streambank disturbance would be based on a percentage of natural streambank stability. Table 8 provides a summary of the initial grazing strategy for Campbell-Loope Leviathan Allotment and includes utilizations levels lower than the maximum allowed due to the current ecological condition of the allotments.

**Table 6. Maximum forage utilization standards as described in the 1986 Toiyabe Forest Plan<sup>1</sup>, the Sierra Nevada Forest Plan Amendment<sup>2</sup>, and the Greater Sage Grouse Bi-State DPS Forest Plan Amendment<sup>3</sup>. Standards for 'Non-Functioning' condition class derived from ID team assessments to adequately protect resources<sup>4</sup>. Condition class terms are derived from the forest plans and are used interchangeably. Where pertinent, changes in utilization standards from Forest Plan Amendments are shown. Standards that are less restrictive are superseded by more stringent standards.**

Management System	Vegetation Type	Maximum Percent Utilization					
		GRASS OR FORB			SHRUB		
		Condition Class			Condition Class		
		Unsatisfactory <sub>1</sub> (Early Seral <sub>2</sub> ); (Non-Functioning <sub>4</sub> )	Unsatisfactory <sub>1</sub> (Early-mid Seral <sub>2</sub> ); (Functioning-at-Risk)	Satisfactory <sub>1</sub> (Late Seral <sub>2</sub> ); (Functioning <sub>3</sub> )	Unsatisfactory <sub>1</sub> (Early Seral <sub>2</sub> ); (Non-Functioning <sub>4</sub> )	Unsatisfactory <sub>1</sub> (Early-mid Seral <sub>2</sub> ); (Functioning-at-Risk)	Satisfactory <sub>1</sub> (Late Seral <sub>2</sub> ); (Functioning <sub>3</sub> )
Rest Rotation or Deferred	Aspen, Sagebrush, Mountain brush and Grassland,	35% <sub>4</sub>	45% <sub>01</sub>	45% <sub>03</sub> (Toiyabe FP=55%)	20% <sub>4</sub>	35% <sub>03</sub> (Toiyabe FP=40%)	40% <sub>02</sub> (in non BSSG* habitat)  35% <sub>03</sub> (within *BSSG habitat) (Toiyabe FP=50%)
	Riparian/ Meadow	20% <sub>4</sub>	30% <sub>02</sub> -Minimum 6" stubble ht. (Toiyabe FP=55%)	40% <sub>02</sub> -Minimum 4" stubble ht. (Toiyabe FP=65%)	10% <sub>4</sub>	20% <sub>02</sub> (Toiyabe FP=25%)	20% <sub>02</sub> (Toiyabe FP=35%)

\*BSSG= Bi-state sage grouse

**Table 7. Ecological Conditions and Proposed Proper Use Criteria by Habitat Group.**

UNITS WITHIN THE ALLOTMENTS	HABITAT GROUP/PROPER USE CRITERIA									
	ALPINE			RIPARIAN/MEADOWS				UPLANDS (brush, aspen, non-meadow grasslands)		
	Ecological Condition	Allowable Utilization		Ecological Condition	Allowable Utilization		Streambank Alteration <sub>3</sub>	Ecological Condition	Allowable Utilization	
		Woody	Herbaceous		Woody (willow, aspen)	Herbaceous			Woody	Herbaceous
Leviathan Allotment										
Lexington Unit	N/A	N/A	N/A	FR	20%	30%	20%	FR	35%	40%

UNITS WITHIN THE ALLOTMENTS	HABITAT GROUP/PROPER USE CRITERIA									
	ALPINE			RIPARIAN/MEADOWS				UPLANDS (brush, aspen, non-meadow grasslands)		
	Ecological Condition	Allowable Utilization		Ecological Condition	Allowable Utilization		Streambank Alteration <sub>3</sub>	Ecological Condition	Allowable Utilization	
		Woody	Herbaceous		Woody (willow, aspen)	Herbaceous			Woody	Herbaceous
Mogul Unit	N/A	N/A	N/A	FR	20%	30%	20%	FR	35%	40%
Indian Unit	N/A	N/A	N/A	FR	20%	30%	20%	FR	35%	40%

**Table 8. Summary of Initial Grazing Strategy for the Campbell-Loope Allotment**

ALLOTMENT	ACRES	PERMITTED HEAD MONTHS	PERMITTED SEASON OF USE	UTILIZATION UPLANDS		UTILIZATION RIPARIAN MEADOWS		STREAMBANK DISTURBANCE	GRAZING STRATEGY
				Herbaceous	Woody	Herbaceous	Woody		
Campbell-Loope	15,093	NTE 3,038	May15th-October 31st	40%	35%	30%	20%	20%	Deferred and rest Indian Unit

## Herbaceous Species:

The Forest applies utilization standards to both riparian and upland herbaceous species. Trigger points for proper use in riparian and upland areas are from 0-30% for herbaceous vegetation depending on current condition. Proper use, based on existing grazing management should be checked against trend data to determine if the current proper use is appropriate or may need to be adjusted (Swanson et al, 2006).

## Utilization Standards for Herbaceous Vegetation

**Table 9: Utilization standards for herbaceous species.**

Units within the allotment	Habitat Group/ Proper Use Criteria			
	RIPARIAN/MEADOWS <sub>2</sub>		UPLANDS (non-meadow grasslands) <sub>1, 3</sub>	
	Ecological Condition	Herbaceous	Ecological Condition	Herbaceous
Lexington Unit	FR/ Early Seral	30%	FR/ Early Seral	40%
Mogul Unit	FR/Early Seral	30%	FR/ Early Seral	40%
Indian Unit	FR/Early Seral	30%	FR/ Early Seral	40%

1. Toiyabe Land and Resource Management Plan (USDA 1986); 2. Sierra Nevada Forest Plan Amendment (USDA ROD 2004);

3. BSSG (USDA ROD 2016)

The following is an excerpt from the Sierra Nevada Forest Plan Amendment (USDA ROD 2004):

“In meadows that are in early seral status (an early stage of succession in a plant community or vegetation type, generally characterized by plant species that are adapted to colonizing disturbed areas with a high proportion of bare soil) livestock utilization of grass and grass-like plants must be limited to 30% (or minimum six-inch stubble height).”

## Woody Species:

Woody riparian species play an important role in some riparian systems, providing shade, nesting and foraging habitat for wildlife, and roots and stems for roughness and streambank stability. Other woody species provide important wildlife habitat in uplands. Many of these species are palatable to livestock and/or wildlife. Excessive use of woody species can prevent regeneration and limit density, height, canopy volume, or habitat quantity and quality. Specific use levels on woody species are used as triggers for livestock movement. Use levels for woody species should not be used as a long-term resource objective. Trigger points for livestock on woody species are from 0-20%, depending on current condition.

## Utilization Standards for Woody Vegetation

**Table 10: Utilization standards for woody species.**

Units within the allotment	Habitat Group/ Proper Use Criteria			
	RIPARIAN/MEADOWS (aspen, willow) <sub>2</sub>		UPLANDS (mountain brush communities, bitterbrush) <sub>1,3</sub>	
	Ecological Condition	Woody	Ecological Condition	Woody
Poor Boy Unit	FR/ Early Seral	20%	FR/ Early Seral	35%
Mogul Unit	FR/ Early Seral	20%	FR/ Early Seral	35%
Indian Unit	FR/ Early Seral	20%	FR/ Early Seral	35%

1. Toiyabe Land and Resource Management Plan (USDA 1986); 2. Sierra Nevada Forest Plan Amendment (USDA ROD 2004);

3. BSSG (USDA ROD 2016)

The following is an excerpt from the Sierra Nevada Forest Plan Amendment (USDA ROD 2004):

“In riparian areas, browsing on mature riparian shrubs (including willow and aspen) is not to exceed 20% of the annual leader growth and is not to exceed more than 20% of individual seedlings.”

## Riparian and Upland

The following table from the BSSG Forest Plan Amendment will be incorporated into the management of this allotment:

**RU-S-02:** Manage livestock grazing in accordance with the utilization standards in this table.



Community Type	Percent Utilization of Key Species	Terms and Conditions
<b>Mountain Big Sagebrush</b>	<45% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Wyoming and Basin Big Sagebrush</b>	<35% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Black Sagebrush</b>	<35% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Riparian and Wet Meadows</b>	<50% herbaceous species; <35% woody species (current year's growth); or average stubble height of at least 4 to 6 inches (depending on site capability and potential) for herbaceous riparian vegetation	Average stubble height 4 to 6 inches: Livestock removed in 5 days of reaching utilization level based on site; or (sequential action) no grazing from May 15 to August 30 in brood-rearing habitat

**Table 2. From page 6.**

### **Soil Disturbance/Streambank Alteration:**

Stable soils and streambanks maintain soil productivity, decrease rates of erosion, improve water quality, and aquatic habitat. Trigger points for livestock on soil disturbance and/or streambank disturbance are from 0-20%, depending on current condition.

### **Disturbance/Alteration Standards for Soils and Streambanks:**

To avoid impacts to fragile riparian soils and vegetation, no bedding, resting, or other concentrated livestock use will occur within .25 miles of a stream or other water body.

**Table 11: Standards for Streambank Disturbance.**

Units within the allotment	Habitat Group/ Proper Use Criteria
	Streambank Disturbance <sup>2</sup>
	Stream bank Alterati on
Poor Boy Unit	20%
Mogul Unit	20%
Indian Unit	20%

1. Toiyabe Land and Resource Management Plan (USDA 1986); 2. Sierra Nevada Forest Plant Amendment (USDA ROD 2004);

3. BSSG (USDA ROD 2016)

The following is an excerpt from the Sierra Nevada Forest Plan Amendment (USDA ROD 2004):  
 “Disturbance of Meadow-associated streambanks and natural lake and pond shorelines is not to exceed 20% of the stream reach or 20% of the natural lake or pond shoreline.”

## Range Improvements

The permittee is responsible for the maintenance of the water developments on the Campbell-Loope S&G Allotment. These improvements will be maintained to the following standards set forth by the Forest Service, and Natural Resource Conservation Service (NRCS) if used for the design of water developments. Backhoe, or other mechanized equipment work will occur in the fall, or when spring flows are low and soils are dry and more durable. To prevent weed spread, equipment will be washed prior to entering the allotment.

**Table 12: Water Improvements within the Campbell-Loope S&G Allotment.**

Improvement	Location
Herder Spring development & Troughs	11 S 0266641 by 4285871 (Lexington Unit)
Sheep Spring development & Troughs	NW1/4 of SE1/4, S.30, T10N, R21E (Mogul Unit)
Curtz Mine Well & Trough Development	11S 0264570 by 4284751 (Lexington Unit)
Rd. 311 Spring development & Troughs	Option 1: Spring Location: 11S 263489 by 4286852 Option 2: Bedrock Mortar: 11S 263327 by 4286540 (Mogul Unit)
Poor Boy Spring development & Troughs	11 S 0259601 by 4282635 (Indian Unit)

**Table 13: Water Improvements within the Campbell-Loope S&G Allotment additional information.**

Improvement	Proposed Action
<b>Herder Spring development &amp; Troughs</b>	Maintenance
UTM: 11 S 0266641 by 4285871 (Lexington Unit)	Improve and repair existing troughs as needed (8 troughs). Replace current water holding tank (1,500 gallons) with a 3,000 gallon water tank- same footprint. 200ft.-300ft. of 1.5"-2" poly pipe to fill tank and return flow to riparian area. Install wildlife ramps. Use backhoe for future maintenance as needed.
<b>Sheep Spring development &amp; Troughs</b>	Maintenance
UTM: 11S 0265233 by 4285816 (Mogul Unit)	Improve and repair existing troughs as needed (12 troughs). Pipe is laid underneath the road. Possible placement of new holding tank if necessary due to loss of water: 1,500-3,000 gallon tank. 200 ft. of poly pipe. Continue to allow backhoe use if replacement of troughs or tank is necessary in the future for maintenance. Install wildlife ramps.

Curtz Mine Well & Trough Development	New Development
<p>UTM: 11S 0264570 by 4284751 (Lexington Unit)</p>	<p>Use the 10" vertical pipe with wires coming up from the ground- it is either just a pipe or pipe and buried tank. Due to the sites eligibility, we are not authorizing a backhoe to dig up the pipe and/or associated tank. The water will be tested prior to development. A solar or generator-powered portable pump will be installed. A backhoe will be used to level out an area adjacent to the pump for a 1,500-3,000 gallon portable water tank, and the backhoe will be used to place it. Approximately 500'-1000' of poly pipe at 1 1/4"-2" diameter will gravity-feed water downhill to the troughs, which will be out of the eligible site. Pipe will remain aboveground. A backhoe will be used for leveling the ground, installing the gravel apron, and placing 60ft. of troughs (8-12 sheep troughs). An outlet pipe and wildlife ramps will also be installed. Authorize backhoe use if replacement of troughs or tank is necessary in the future for maintenance.</p>
Rd. 311 Spring development & Troughs	New Development
<p>Option 1: Spring Location: UTM: 11S 263489 by 4286852</p> <p>Option 2: Bedrock Mortar: UTM: 11S 263327 by 4286540 (Mogul Unit)</p>	<p>Option 1: Utilize existing spring to place a CMP catchment basin, pipe and portable pump (solar or generator-powered). 1.25" – 2" diameter poly pipe to transport water 300'-1000' to the east. This pipe would remain aboveground, and end at a 1,500-3,000 gallon capacity tank. A backhoe will be used to level the ground for the water tank, gravel apron, and trough placement for 60ft. of gravity-fed sheep troughs. An outlet pipe and wildlife ramps will be installed. Authorize backhoe use if replacement of troughs or tank is necessary in the future for maintenance.</p> <p>Options 2: Install a CMP catchment basin within the creek utilizing either a small backhoe or hand tools, and install a portable pump (solar or generator-powered). A 1.25" – 2" diameter poly pipe to transport water 300'-600' to the west. This pipe would remain aboveground, and end at a 1,500-3,000 gallon capacity tank. A backhoe will be used to level the ground for the water tank, gravel apron, and trough placement for 60ft. of gravity-fed troughs. An outlet pipe and wildlife ramps will be installed. Authorize backhoe use if replacement of troughs or tank is necessary in the future for maintenance.</p>
Poor Boy Spring development & Troughs	Reconstruction

UTM: 11 S 0259601 by 4282635 (Indian Unit)	Improve historic spring development and replace troughs- remain within its original footprint. Use a backhoe to level the ground for a portable water tank, place a gravel apron, and place the new troughs- approximately 60ft. of 8-12 sheep troughs. Install a 1,500- 3,000 gallon water tank. Pipe would remain aboveground. An outlet pipe and wildlife ramps will be installed. Authorize backhoe use if replacement of troughs or tank is necessary in the future for maintenance.
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## Monitoring

Monitoring has the dual purpose of ensuring compliance with the design features and proper use criteria for an allotment and determining whether the current management of the allotment is maintaining or moving the area toward functioning condition. Implementation and focused effectiveness monitoring are necessary to determine when or if management changes should be made and to guide the direction that those changes take.

The following monitoring activities will be carried out by the grazing permittee and the Forest Service during or at the end of the grazing season. Results will be shared with the permittee to improve livestock management. All monitoring information collected by the permittee and the Forest Service will be included in the 2210 allotment file.

## Key Areas

Because the acreage of this allotment covers a vast area, soil and vegetation parameters cannot be monitored on every part of the allotment. The “key area concept” would be used for short-term and long-term monitoring efforts. A key area is a relatively small portion of rangeland that because of its location, grazing or browsing value, and/or use serves as a monitoring and evaluation site that is representative of conditions in the larger area. A key area guides the general management of the entire area of which it is a part of and would reflect the overall acceptability of current grazing management over the range. Key areas can be a short segment of stream or a small upland area. A key area can also be an entire stream reach or large upland basin.

The initial key area locations for short-term and long-term monitoring for each allotment are listed below; however, the locations of key areas for monitoring may be changed or adjusted over time as conditions change or new information becomes available.

Key areas are selected by utilizing the Forest Service approved procedures for selecting key areas and key species located in the Nevada Rangeland Monitoring Handbook, Second Edition, Appendix A. “A key area is a relatively small portion of a unit selected as a representative monitoring point for measuring change in vegetation or soil and the impacts of management. It is chosen because of its location, use, and value. They should serve as representative samples for long- and/or short-term monitoring.” Key areas include but are not limited to:

**Table 14: Established key areas for implementation or short-term monitoring.**

<b>Benchmark or Landscape Area Name/Location</b>
Herder Spring upland (bitterbrush): 11S 266277 by 4286361 (Lexington Unit)
Rd. 311 Riparian: 11S 263001 by 4286534 (Mogul Unit)
Poor Boy Road (Upland): 11S 259207 by 4283985 (Indian Unit)

### **Allotment Inspections /Compliance Monitoring**

Compliance monitoring ensures livestock are distributed in the correct units and areas authorized for grazing. It also includes improvement maintenance inspections. Allotment inspections will occur throughout the grazing season. Results will be shared with the permittee to improve livestock management.

### **Annual/Implementation Monitoring (Short-Term)**

Short-term monitoring would be used to determine if the actions described in the Leviathan-Loope Rangeland Project EA and DN, Proposed Action are being implemented as planned and are meeting the proper use criteria and design criteria. It could also be used to conduct limited tracking on ecological condition and trend. Short-term monitoring encompasses a wide variety of monitoring activities.

Overall monitoring of conditions on the Carson Ranger District, including the project area, occurs every year. This kind of monitoring is based on general observations of rangeland conditions by the Forest Service and reports from other visitors to the project area. This work is done in conjunction with rangeland management, as well as other resource management activities (i.e., fisheries, wildlife, archaeology, etc.). This information would be evaluated to determine if additional monitoring emphasis is desirable in a particular allotment.

Short-term monitoring would involve the following actions:

- Annual monitoring includes utilization and stubble height monitoring in key areas. Data will be used to determine when livestock must be moved from one unit to another and to make any necessary adjustments to livestock numbers and/or season of use. Final utilization and stubble height readings will be taken at the end of the grazing season each year. Annual monitoring will follow accepted Forest Service Protocols.
- The Forest Service would conduct short-term monitoring (including within season trigger and proper use criteria observations) on every allotment where grazing is authorized that year- at the very least an ocular estimate will be done. Annual operating instructions (AOIs) and terms and conditions would be monitored for compliance.
- Within season and end-of-season utilization would be monitored using the annual monitoring methodologies included in, but not limited to, the Utilization Studies and Residual Measurements (Interagency Technical Reference, 1734-3, 1996), the Nevada Rangeland Monitoring Handbook, third edition (2018), and other BLM technical references such as Multiple Indicator Monitoring (2017) and Proper Functioning Condition assessments (BLM technical references).

- Proper use criteria monitoring for end-of-season utilization would be conducted in key areas. As discussed above, key areas are locations that are representative of conditions in the larger area. Monitoring locations could vary from year to year because livestock do not use the same place in the same way every year.
- When feasible, permittees, other rangeland users, and interested parties would be invited ahead of time to participate in the short-term monitoring efforts. However, monitoring inspections may occur at any time as opportunities present themselves.
- The responsibility for ensuring livestock moves occur on time remains with the permittee. To ensure they meet this responsibility, permittees would conduct monitoring of proper use criteria and compliance with the AOIs, which could include design features, improvement maintenance, and other standards, guidelines, and terms and conditions in the grazing permits.
- Permittees, other rangeland users, and interested parties would be encouraged to share any short-term monitoring data they collect. Permit administrators would review this monitoring information to ensure compliance and prepare for the next grazing season. Monitoring information may include documentation of utilization measurements, photos, or other relevant documentation.
- Inspections, monitoring, and continual dialogue with permittees (throughout and immediately following the grazing season) provide an ongoing feedback loop for the need to maintain or change management on the ground. Monitoring results for each allotment will be reviewed with the permittee and documented in following year's AOI.

### **Effectiveness Monitoring (Long-Term)**

Long-term monitoring would be used to determine if the proper use criteria and grazing management guidelines included in the DN and the AMP are effective in moving resources towards functioning ecological conditions and ensuring an upward or stable trend in resource conditions. Long-term monitoring would gauge the success of allotment management by comparing evaluations on rangeland condition and trend against previous evaluations. Trend is characterized as “toward potential,” “away from potential,” or “static” (an old SRM term) or “direction of change over time” (FSH 2209.21). The appraisal of trend is simply the recognition of the nature, rate, and direction of ecological change (USDA FS 1951).

For this allotment, future ecological condition assessments would be based on the attributes that have a cause and effect relationship with adjustments in livestock management. Data on all attributes would be collected when monitoring is conducted so the general condition of the area can be determined. After the monitoring data has been collected, attributes that are not in functioning condition would be individually evaluated to determine if domestic livestock grazing is affecting them. This evaluation would be documented as part of the long-term monitoring report. If the evaluation does not identify a causal link between the authorized grazing activities and an attribute that is not in functioning condition, that attribute would not be considered in the project-level assessment of ecological condition or in a determination to adjust proper use criteria. Examples of situations where an attribute would not be used include conifer encroachment into aspen stands, pinyon-juniper encroachment into uplands, and water quality attributes affected by other activities.

Current conditions and trends have been identified in the Campbell-Loope Allotment by using a variety of data and monitoring techniques which include ecology plots, nested frequency studies, and point intercept studies. Scorecards, including the Sierra Nevada Riparian Field Guide and the Matrices, as well as Ecological Site Descriptions were used to evaluate the data and guide in the identification of current ecological condition.

Long-term monitoring sites are representative of the dominant soil and vegetation types on the allotments- key areas. Long-term monitoring locations may be added or modified over time to adjust to new and/or updated information (FSH 2209.21, 42). Table 15 identifies all long-term plot locations and study type completed across the Campbell-Loope Allotment.

The long-term monitoring sites would be re-evaluated approximately every 5-8 years to determine rangeland condition, using the appropriate scorecards discussed above. This time frame was chosen because measurable changes in conditions occur slowly in the project area. More frequent monitoring is unlikely to result in any information that documents that the conditions have changed. Approved monitoring methods and protocols are listed in FSH 2209.21, chapter 40 and include photograph points, nested frequency, point ground cover samples, line intercept, plant density, and riparian protocols described in Cowley and others (2005) and Winward (2000). To determine actual trend, the long-term monitoring sites would be reevaluated using the appropriate parameter (composition, cover, etc.) and methodology (nested frequency, point-intercept, photo points, etc.). The condition and trend information, along with other data would be used to evaluate any needs for change in management, including adjustments to the proper use criteria or season of use.

Permittees would be encouraged, but not required, to participate in long-term monitoring and to collect data on their allotment(s). Data collection could be done in cooperation with the Forest Service or entirely on their own. Any data collected by the permittees would be collected using Forest Service approved methodologies or protocols. The Forest Service would fully review all data collected by the permittees to determine the quality and reliability of the data. All data collected would be stored in the allotment monitoring files (2210) at the Carson Ranger District.

Long-term monitoring using the Matrices and other appropriate protocols to measure trend would generally occur on a 5-8-year cycle. If the methods for evaluating condition or trend have changed by the time of the monitoring, adjustments would be made to ensure that data can be “cross-walked” between the different methodologies so actual long-term trend can be determined.

Condition and trend long-term monitoring is used to determine if the area is meeting or moving toward desired conditions. Long-term trend data will be used to evaluate timing, intensity, frequency, and management of grazing. Annual triggers may be adjusted in order to meet long-term desired conditions. Long-term monitoring will follow accepted Forest Service protocols. The following table shows the long-term plots monitored in 2014.

**Table 15: Effectiveness or Long-term monitoring plot locations for the Campbell-Loope Allotment.**

Plot Code	Plot Name	Date	State	Datum	Zone	Northing	Easting	Study Type
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27094	FOREST CITY	7/01/2014	CA	NAD83	11	264385	4284458	Nested Frequency
14402	ROCKY ROAD	7/01/2014	CA	NAD83	11	263098	4286574	Point Intercept
14404	MOGUL HILL	7/03/2014	CA	NAD83	11	264155	4286153	Point Intercept
14407	LOOPE VIEW	7/05/2014	CA	NAD83	11	266637	4285869	Point Intercept
14403	POOR BOY ASPEN	7/02/2014	CA	NAD83	11	260056	4282623	Point Intercept
14406	CAMPBELL ASPEN	7/05/2014	CA	NAD83	11	264707	4285362	Point Intercept
14405	CAMPBELL UPLAND	7/03/2014	CA	NAD83	11	266594	4286134	Point Intercept
28115	R-2-5	7/02/2014	CA	NAD83	11	258986	4283881	Parker Three-Step

## Management Adjustments Based on Monitoring

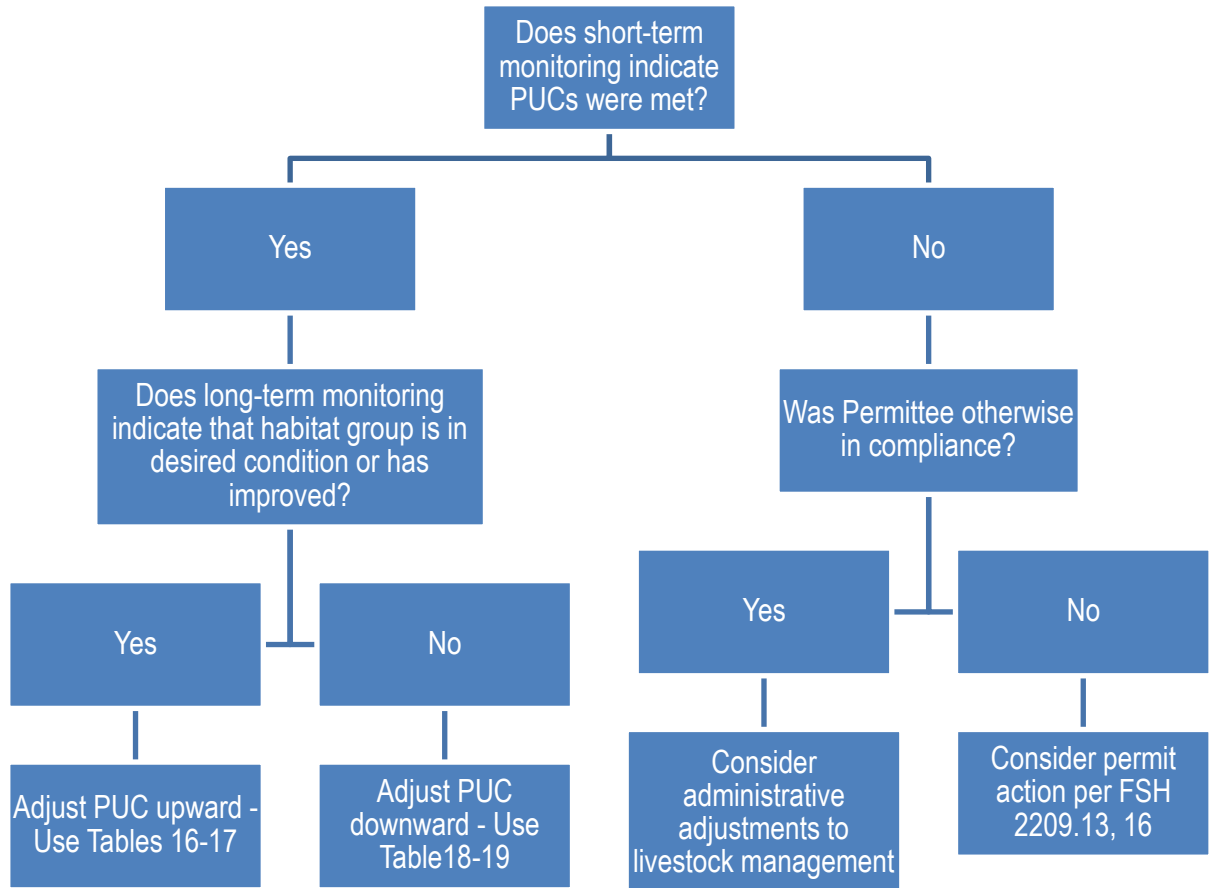
Based on the successes or failures observed through short-term and long-term monitoring, adjustments to grazing strategies would be made. As discussed above, short-term monitoring would occur annually, and long-term monitoring would generally occur on a 5-8-year cycle.

The information obtained through this monitoring effort would be evaluated to determine if management of an allotment should be adjusted. The flowchart included below displays how monitoring results would be used to determine whether adjustments to grazing management are warranted and what kind of adjustments would be made. See figure 1. If adjustments are necessary, they would be included in the next year's AOIs.

As the flowchart indicates, monitoring results could lead to several different kinds of adjustments to livestock grazing or management. In some circumstances, prescribed adjustments would be made to the proper use criteria if ecological conditions decline or improve. Other situations would call for administrative adjustments, including a temporary reduction on within season triggers and proper use criteria, or a temporary reduction in the number of livestock on the allotment. New grazing improvements, such as fencing or water developments, would require additional environmental analysis. Finally, if the permittee is not in compliance with the terms of their permit, administrative action on the permit may be warranted. The administrative actions are included in this discussion to provide a complete picture on how the monitoring results would be applied.



**Figure 1. Process Used to Determine Adjustments Based on Monitoring.**



**Table 16. Proper Use Adjustments When Long-Term Monitoring Indicates Desired Condition or Improvement in Ecological Condition of Aspen, Sagebrush, Mountain Brush, and Grassland Vegetation Communities.**

Aspen, Sagebrush, Mountain Brush, and Grassland	Desired Condition Management Objective	Existing Condition and Trend	End of Season Indicator	Threshold of Concern	Adaptive Management if Threshold of Concern is Reached	Monitoring
<b>Herbaceous Vegetation</b>	<b>Satisfactory/ Functioning ecological condition</b>	Functioning	45% utilization	Long-term monitoring indicates functioning condition	Continue allowing up to 45% utilization	Utilization measured at end of growing season
		Functioning-at-risk	45% utilization	Long-term monitoring indicates functioning condition	Allow up to 45% utilization	
		Non-functioning	35% utilization	Long-term monitoring indicates functioning-at-risk condition	Allow up to 45% utilization	
<b>Woody Vegetation</b>	<b>Satisfactory/ Functioning ecological condition</b>	Functioning	40% utilization (35% for Bi-State Habitat)	Long-term monitoring indicates functioning condition	Continue allowing up to 40% utilization (35% for Bi-State Habitat)	Browse use measured at end of grazing season
		Functioning-at-risk	35% utilization	Long-term monitoring indicates functioning condition	Allow up to 40% utilization (35% for Bi-State Habitat)	
		Non-functioning	20% utilization	Long-term monitoring indicates functioning-at-risk condition	Allow up to 35% utilization	

**Table 17. Proper Use Adjustments When Long-Term Monitoring Indicates Desired Condition or Improvement in Ecological Condition in Riparian and Meadow Vegetation Communities.**

<b>Riparian / Meadow</b>	<b>Desired Condition Management Objective</b>	<b>Existing Condition and Trend</b>	<b>End of Season Indicator</b>	<b>Threshold of Concern</b>	<b>Adaptive Management if Threshold of Concern is Reached</b>	<b>Monitoring</b>
<b>Herbaceous Vegetation</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/late seral	40% utilization (min. 4" stubble height)	Long-term monitoring indicates functioning condition	Continue allowing up to 40% utilization (min. 4" stubble height)	Utilization measured at end of growing season
		Functioning-at-risk/early seral	30% utilization (min. 6" stubble height)	Long-term monitoring indicates functioning condition	Allow up to 40% utilization (min. 4" stubble height)	
		Non-functioning/early seral	20% utilization	Long-term monitoring indicates functioning-at-risk condition	Allow up to 30% utilization (minimum 6" stubble height)	
<b>Woody Vegetation</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/late seral	20% (SNFPA) utilization	Long-term monitoring indicates functioning condition	Continue allowing up to 20% utilization	Browse use measured at end of grazing season
		Functioning-at-risk/early seral	20% (SNFPA) utilization	Long-term monitoring indicates functioning condition	Allow up to 20% (SNFPA) utilization	
		Non-functioning/early seral	10% utilization	Long-term monitoring indicates functioning-	Allow up to 20% (SNFPA) utilization	

				at-risk condition		
<b>Streambank Alteration</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning	20% alteration	Long-term monitoring indicates functioning condition	Continue allowing up to 20% alteration	Alteration end of time in unit
		Functioning-at-risk	20% alteration	Long-term monitoring indicates functioning condition	Allow up to 20% alteration	
		Non-functioning	10% alteration	Long-term monitoring indicates functioning-at-risk condition	Allow up to 20% alteration	

**Table 18. Proper Use Adjustments When Long-Term Monitoring Indicates Decline in Condition of Aspen, Sagebrush, Mountain Brush, and Grassland Vegetation Communities.**

<b>Aspen, Sagebrush, Mountain Brush, and Grassland</b>	<b>Desired Condition Management Objective</b>	<b>Existing Condition and Trend</b>	<b>Existing End of Season Indicator</b>	<b>Threshold of Concern</b>	<b>Adaptive Management if Threshold of Concern is Reached</b>	<b>Monitoring</b>
<b>Herbaceous Vegetation</b>	<b>Satisfactory/Functioning ecological condition</b>	Functioning	45% utilization	Long-term monitoring indicates functioning-at-risk condition	Remain at 45% utilization, consider additional actions	Utilization measured at end of growing season
		Functioning-at-risk	45% utilization	Long-term monitoring indicates non-functioning condition	Reduce to 35% utilization	
		Non-functioning	35% utilization	Long-term monitoring indicates non-	Remain at 35% utilization, consider	

				functioning condition	additional actions	
<b>Woody Vegetation</b>	<b>Satisfactory/Functioning ecological condition</b>	Functioning	40% utilization (35% in Bi-State Habitat)	Long-term monitoring indicates functioning-at-risk condition	Reduce to 35% utilization	Browse use measured at end of grazing season
		Functioning-at-risk	35% utilization	Long-term monitoring indicates non-functioning condition	Reduce to 20% utilization	
		Non-functioning	20% utilization	Long-term monitoring indicates non-functioning condition	Remain at 20% utilization, consider additional actions	

**Table 19. Proper Use Adjustments When Long-Term Monitoring Indicates Decline in Condition in Riparian and Meadow Vegetation Communities.**

<b>Riparian / Meadow</b>	<b>Desired Condition Management Objective</b>	<b>Existing Condition and Trend</b>	<b>Existing End of Season Indicator</b>	<b>Threshold of Concern</b>	<b>Adaptive Management if Threshold of Concern is Reached</b>	<b>Monitoring</b>
<b>Herbaceous Vegetation</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/Late Seral	40% utilization (min. 4" stubble height)	Long-term monitoring indicates functioning-at-risk condition	Reduce to 30% utilization (min. 6" stubble height)	Utilization measured at end of growing season
		Functioning-at-risk/Early Seral	30% utilization (min. 6" stubble height)	Long-term monitoring indicates non-functioning condition	Reduce to 20% utilization	

		Non-functioning/Early Seral	20% utilization	Long-term monitoring indicates non-functioning condition	Remain at 20% utilization, consider additional actions	
<b>Woody Vegetation</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/Late Seral	20% (SNFPA) utilization	Long-term monitoring indicates functioning-at-risk condition	Remain at 20% utilization	Browse use measured at end of grazing season
		Functioning-at-risk/Early Seral	20% utilization	Long-term monitoring indicates non-functioning condition	Reduce to 10% utilization	
		Non-functioning/Early Seral	10% utilization	Long-term monitoring indicates non-functioning condition	Remain at 10% utilization, consider additional actions	
<b>Streambank Alteration</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/Late Seral	20% alteration	Long-term monitoring indicates functioning-at-risk condition	Continue allowing up to 20% alteration	Alteration measured at end of time in unit
		Functioning-at-risk/Early Seral	20% alteration	Long-term monitoring indicates non-functioning condition	Reduce to 10% alteration	
		Non-functioning/Early Seral	10% alteration	Long-term monitoring indicates non-functioning condition	Remain at 10% alteration, consider additional actions	

As is demonstrated by figure 1, the process of making adjustments based on monitoring begins with consideration of the results from short-term monitoring. If short-term monitoring indicates that the proper use criteria (PUC) are being met, the next question is whether long-term monitoring indicates that the ecological conditions have improved or declined. If conditions have improved, the adjustments described in tables 16 and 17 would be applied. If conditions have declined, the adjustments described in tables 18 and 19 would be applied.

If short-term monitoring reflects that the PUC are being exceeded, this indicates different problems are occurring and requires different approaches to address them. In this situation, there is a need to consider whether the permittee is otherwise in compliance with the terms of their permit. For example, if the permittee is adhering to stocking levels, moving livestock as required, and maintain the range developments as required, this suggests that there may be a flaw in the design of the grazing strategy. In these circumstances it may be appropriate to make an administrative adjustment to the grazing strategy. Additionally, if a meadow is determined to have >10% bare ground and active erosion, total rest from livestock grazing will occur until it is moved to mid to late seral (SNFPA 2001).

However, if the PUC are being exceeded and the permittee is having other compliance issues, this indicates poor performance on the part of the permittee. In this situation, the appropriate response is to consider action against the permit as described in FSH 2209.13, 16.

### **Possible Management Tools further included in the 2020 DN**

Adaptive management actions may be implemented as long as they are consistent with existing NEPA decisions and/or the administrative authority of the Forest Service. The administrative authority of the Forest Service is described in Title 36 of the Code of Federal Regulations, part 222; and in Forest Service Manuals and Handbooks. Additional NEPA analysis would not be required. Adaptive management actions may be implemented singly or as a set of management actions. Short-term actions will be implemented through the AOI. Modifications to the AMP and/or term grazing permit should be considered where monitoring shows that these actions need to be continued in the long-term or are implemented repeatedly or consistently over time.

Management adjustment actions should be applied where:

- Monitoring shows management objectives have not been achieved or that trend towards achieving desired conditions is not improving.
- Annual indicators of grazing use or grazing standards are not met.
- Climatic events, fire, flood or uses and activities detrimentally impact resource conditions and a modification of grazing use is needed to provide for recovery of the site.

The following list describes the probable actions that will be considered and implemented under adaptive management. However, it is not intended to exclude other actions which may be authorized by the grazing permit or under authority of 36 CFR 222, FS Manuals and Handbooks, and other laws and regulations as they exist or may be enacted.

### **Changes in law or regulations**

Modify the terms and conditions of a permit to conform to changes in law, regulation, executive order, development or revision of an allotment management plan, or other management needs.

### **Season of use, numbers, kind, or class of livestock**

- Modify the season of use, numbers, kind, or class of livestock allowed on the allotment to be grazed under the permit because of resource condition or trend, utilization patterns, or permittee request.
- Adjust the season of use for the allotment or areas within an allotment to reduce grazing impacts through changing the length or duration of use; reduce or eliminate grazing impacts during periods where plants or other resources are most susceptible to damage, or avoid conflicts with other uses such as during periods of high recreation use.
- Adjust the season of use to avoid grazing impacts or conflicts with critical resource needs of T&E species and other wildlife.
- Adjust the season of use at the request of the permittee to provide a better fit to his/her ranch operation.
- Adjust the season of use to take advantage of the availability of additional forage through extending the grazing season.
- Adjust the grazing season in response to seasonal variations in climate and productivity.
- Adjust authorized or permitted livestock numbers during all or a portion of the grazing season to match grazing use to resource conditions and productivity.
- Adjustments to stocking and season of use may be considered jointly or separately as appropriate.

### **Grazing Rotation and Management System**

Alteration of the sequence of pasture use within a grazing season or over a sequential period of years, the timing or season of use, the period or length of use, grazing intensity within a pasture, deferment or rest from grazing use, etc.

### **Management Practices**

Modification to management practices including timing, duration, grazing intensity, salting, herding, and using temporary electric fencing. This includes a range of management and herding practices that vary according to conditions and use that are found on individual grazing allotments. Modification of grazing use may be appropriate to prevent or manage conflicts with other uses such as dispersed recreation, coordinate with other management activities such as timber harvest and forest regeneration, or mitigate conflicts or impacts to other resources. Examples include management of impacts to roads and trails, herding practices around developed recreation sites, use of grazing as a tool for noxious weed management and site preparation for reforestation, provide for maintenance or restoration of aquatic and riparian processes, functions, and beneficial uses, management of line camps, fire and noxious weed prevention, etc.

### **Rest (temporary closure to grazing for a full year)**

Rest the allotment or areas within the allotment for a specific period of years or on periodic rotation where monitoring shows that trend towards achieving desired conditions are not stable or improving. This may also be implemented where fire, flood, etc. detrimentally impact resource conditions or where treatment activities require a period of rest to provide for recovery of the site. If this occurs, specific recovery criteria for when grazing will be allowed should be specified.

### **Unauthorized Areas**

Grazing may not be allowed in areas within an allotment where desired resource conditions cannot be met while sustaining any grazing use. This may include an identification of specific areas within an allotment where livestock grazing will not be allowed.



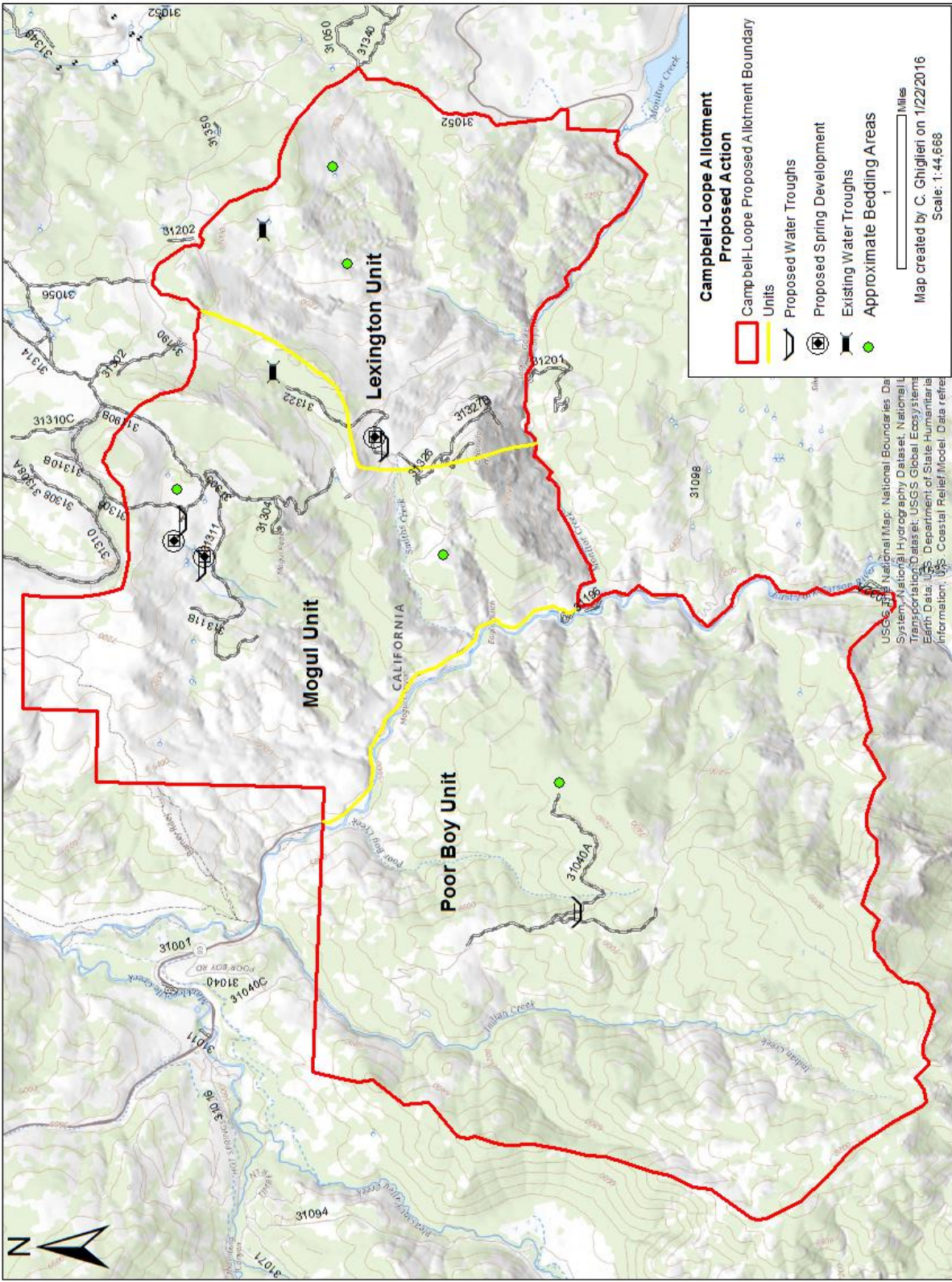
**Additional grazing parameters**

Implementation of additional grazing indicators or triggers or modification of existing parameters may be identified as needed to facilitate achievement of objectives and desired conditions. Annual indicators or triggers generally include: forage utilization limits, woody species utilization limits, streambank disturbance limits, soil disturbance limits, herding practices, etc.

**Range Improvements – Structural and Nonstructural**

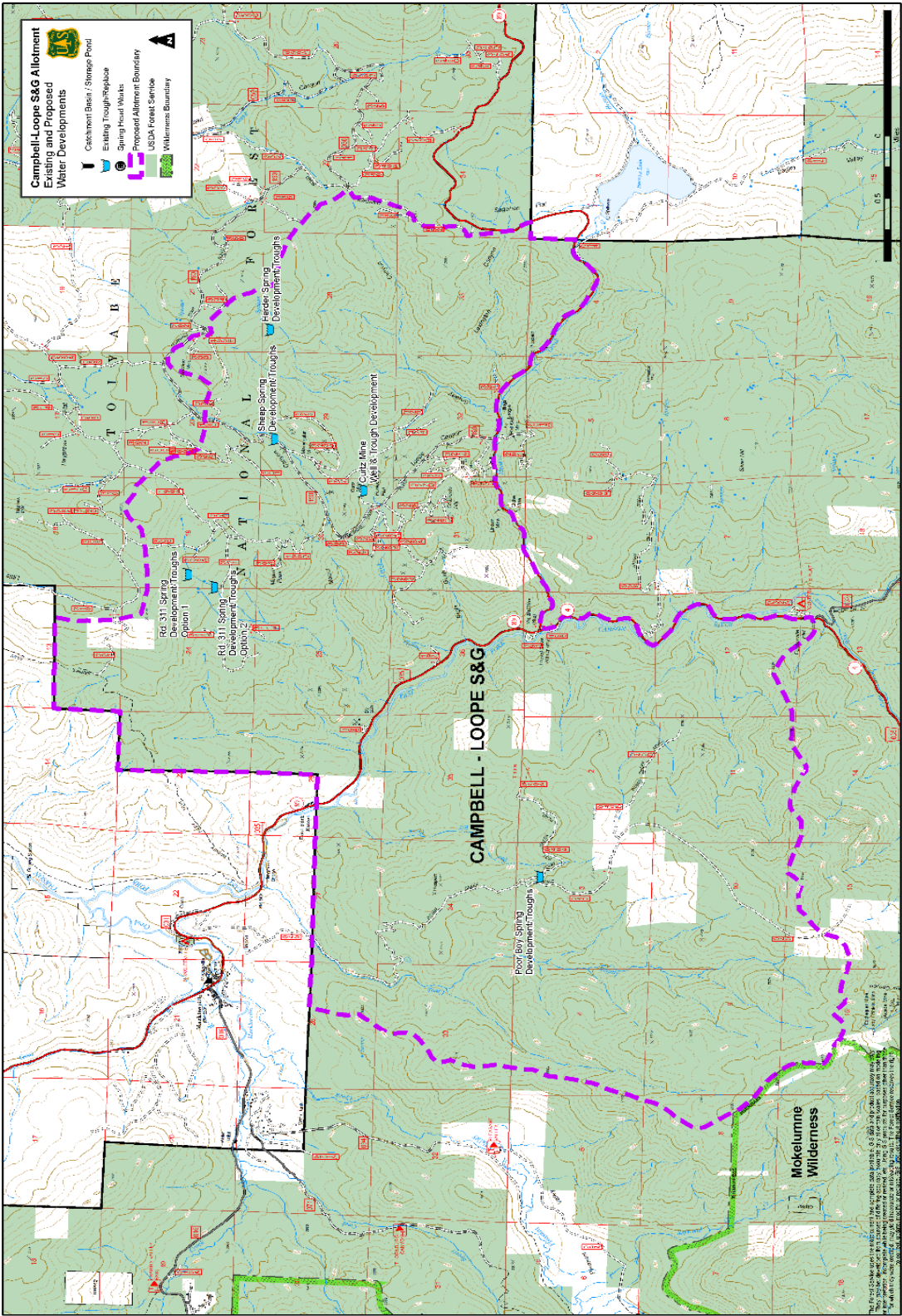
Actions include construction of water developments, fences, corrals and other permanent livestock handling facilities, trails, bridges, prescribed fire, noxious weed treatment, seedings, aspen stand treatments, sagebrush manipulation, etc. These actions may be proposed as adaptive management actions. Additional NEPA analysis will be required for these activities unless they are currently covered under existing NEPA analyses such as noxious weed management.

**Map 1: The new Campbell-Loope S&G Allotment boundary, grazing units and water developments.**

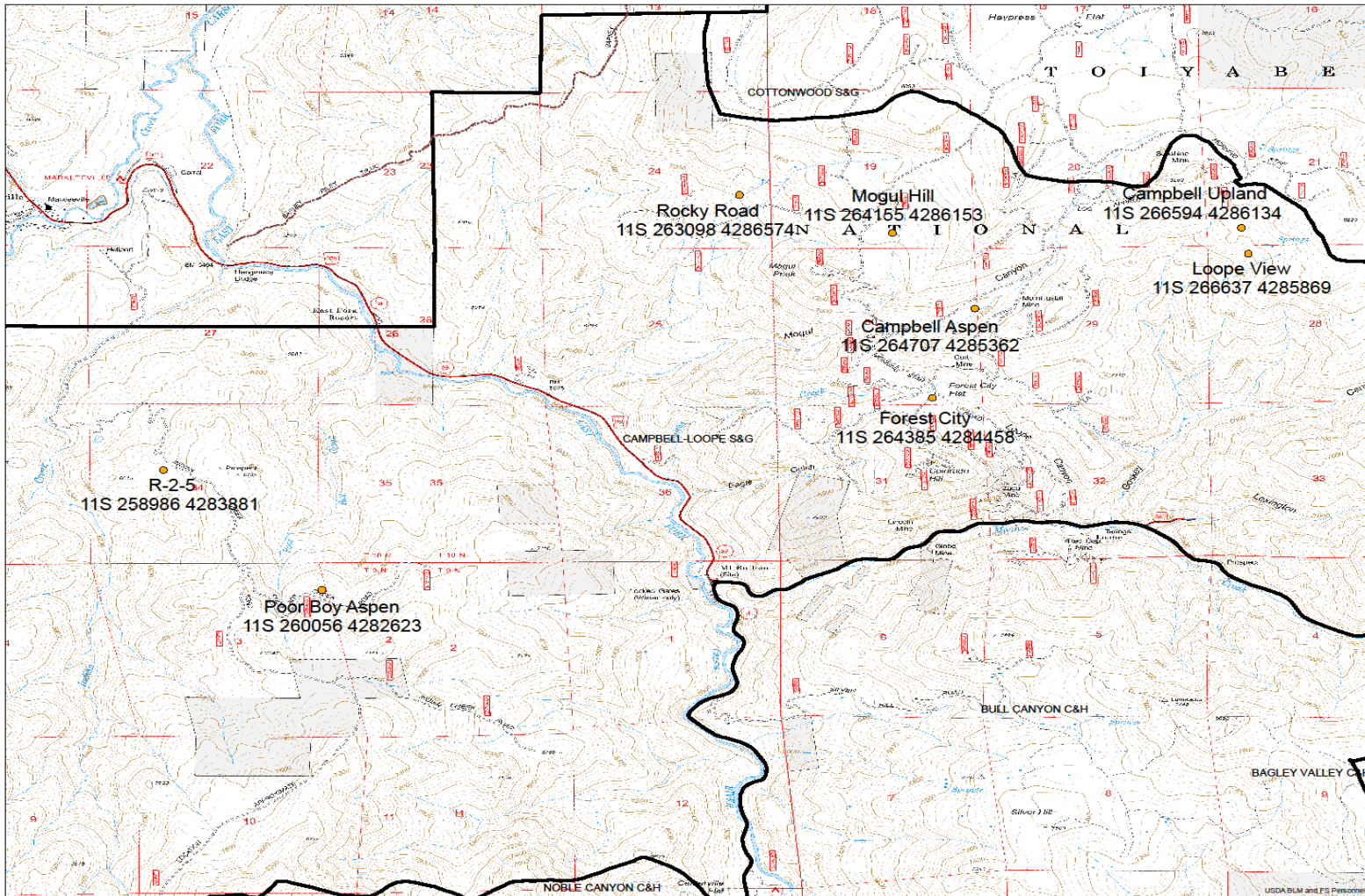




**Map 2: The Campbell-Loope S&G Allotment with water developments.**

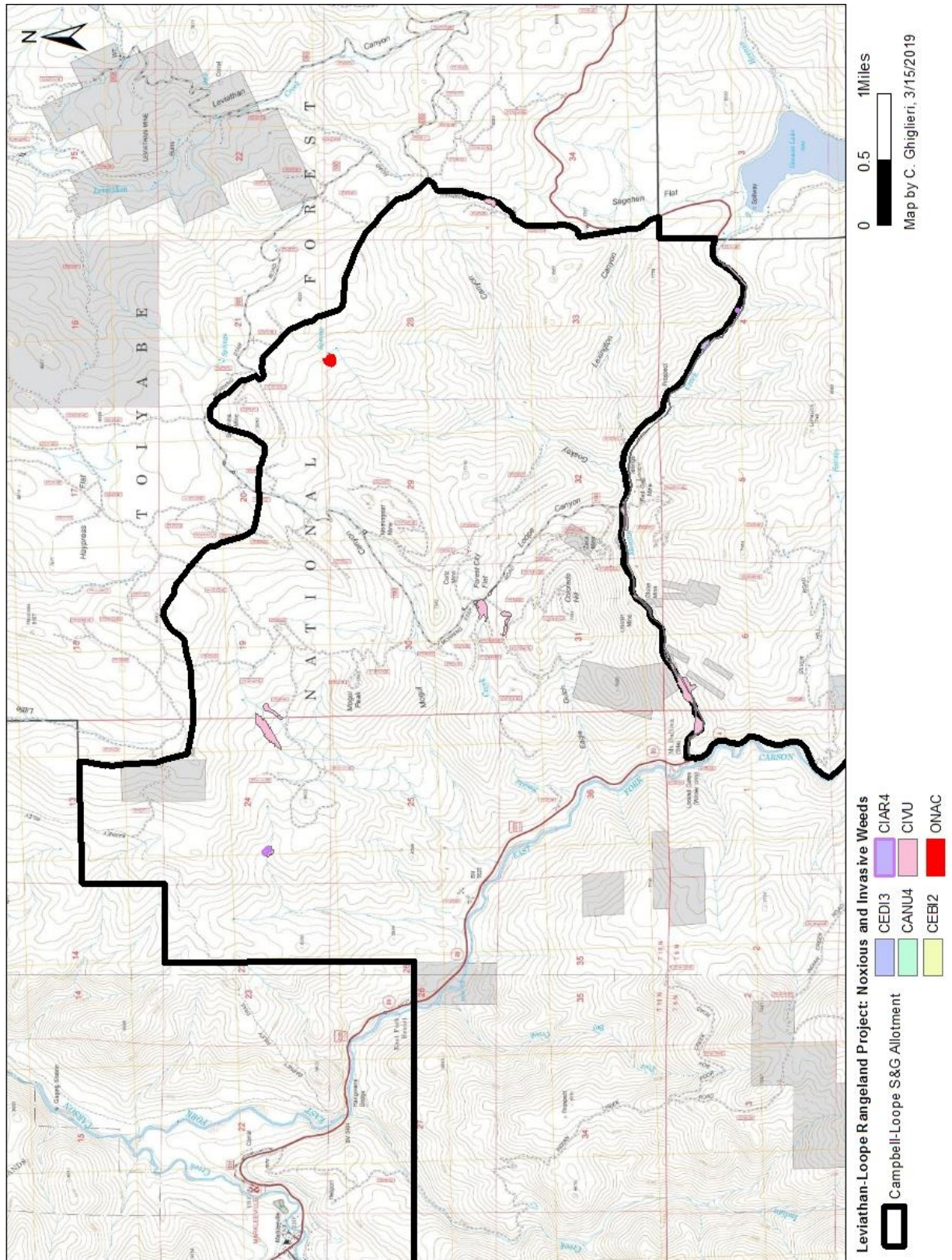


**Map 3: Long term monitoring plot locations within Campbell-Loope S&G.**





**Map 4. Known weed infestations within Campbell-Loope**



## **APPENDIX F – PROCEDURES FOR SELECTING KEY AREAS AND KEY SPECIES**

**Key Areas** – A key area is a relatively small portion of a unit selected as a representative monitoring point for measuring change in vegetation or soil and the impacts of management. It is chosen because of its location, use, and value. It is assumed that key areas, if properly located, will reflect the current management over similar important areas in the unit. They should serve as representative samples for long- and/or short-term monitoring (e.g., range conditions, trends, seasonal degrees of use, resource production, etc.). Key areas may be selected to represent a particular plant community, a specific ecological site, or some other significant portion of a management unit. Rangeland managers, livestock operators, and others who know the range should cooperatively select key areas based on management objectives. Key areas for long-term monitoring should also be used for short-term monitoring. To select a key area:

1. Consult standards and guides and land use and activity plan objectives. Use a vegetation map, aerial photo, soil survey, ecological site inventory, and whatever other useful information is available for the allotment. Use these to determine soils, ecological sites, ecological status, and/or state and risk of transition, if possible. Map vegetation types in the allotment or pasture, if possible. Key management areas should be located where the ecological situation is well understood. They should not bridge two or more ecological sites. Soil taxonomy must be confirmed in the field because soil inclusions lead to differing potentials within the same ecological site (e.g., sandy surface textures produce more perennial grass than finer soil surface textures).
2. Relate key area locations to allotment specific objectives. To do this, gather the Standards and Guidelines; Land Use plan goals and objectives; and any allotment specific goals and objectives from allotment management plans or other pertinent documents. The attributes of the objectives(s) monitored must be present on the area selected.
3. Refine objectives for each key area at the time they are set up in the field based on potential to represent management objectives. Consider the management plan, including triggers and end-of-season indicators.
4. Overlay use pattern map, water locations, and vegetation map together on a base map. Look for the most productive soils and sites with the highest use. Heavy or moderate use areas targeted for improvement in the plan and that are no farther than a mile from water are good places to put a key area (closer than 1 mile in a small pasture). Slight to light use areas do not tell much unless they are used to compare trend or production between heavy or moderate and slight use areas. A key area should represent an area that provides a significant amount, but not necessarily the greatest amount, of available forage in the pasture. This can be ascertained from an evaluation of the utilization and ecological site maps, together with an on-site examination.
5. Choose area(s) representative of the suitable seasonal range or use area. Two or more key areas may be needed for large pastures, pastures that have very rough topography or widely spaced water, various areas where animals tend to locate, areas where different kinds of animals graze, or where the pasture is grazed at different seasons. One key area may represent more than one pasture only if they are in the same grazing system with similar ecological sites, conditions, topography, water,



treatments, etc. Large, unfenced allotments may require many more key areas than implied above.

6. Determine the plant community potential. The site must have the potential to improve or decline. That is, there must be sufficient plants of the key species (those plants identified in management objectives) that an increase is predicted from the management plan and enough that they could decline if management does not achieve objectives or does not work or get implemented correctly. Within an ecological site, the area between abundant and sparse vegetation of the key species is often the best place to establish studies. For example, between abundant and sparse fourwing saltbush in the Sandy Loam 5–8" p.z., Ecological Site of MLRA 29-A change in abundance of key species will show up quickly. Whereas, sparsely populated areas that may have crossed a threshold have little or no potential to improve vegetation and may only go downward in trend. A study placed in the center of a patch of abundant or very little fourwing will take years to show change. It may be necessary to establish a study in such areas if a new water source is to be developed in it or if livestock management changes and this will influence the plant community. Studies in healthy rangeland can also be used for comparison areas.
7. Do not establish a key area in a small, atypical location.
8. Establish key areas in sites that herbivores prefer.
9. Ensure that key areas are accessible to grazing animals because of favorable factors influencing livestock distribution. Areas remote from water or having limited accessibility may be suitable for comparison areas but should not be selected as key areas.
10. Avoid water sources, trails, corrals, historic salt grounds, shade, and other

concentration areas. And, stay away from roadsides or other disturbances.

11. Where multiple herbivore (wild and domestic) use is significant, select key areas as needed.
12. Confine monitoring studies on a key area within the boundary of a single soil, single land form, and single plant community or ecological site. The Key Area Location Form included in this appendix is an example for recording the location and specific selection criteria.
13. Consider the season of use and class of animal because diet preferences change by season, kind, and class of animal.
14. Establish new key area(s) and discontinue reading old key areas if they do not address management objectives. This can happen when the pattern of grazing use is significantly modified because of a difference in season of use, kinds or classes of grazing animals, pasture size, water supplies, or other factors affecting grazing distribution or the management plan.

**Designated Monitoring Areas** – In riparian zones, areas selected for short- and long-term monitoring may be called designated monitoring areas (DMAs) (Cowley and Burton 2005). In riparian areas, key, critical, or designated monitoring areas should:

1. Represent management concerns within the riparian area as reflected by riparian PFC assessments, management plans, and especially management objectives (e.g., be associated with spawning areas for listed fish, if spawning habitat is targeted by recovery plans).
2. Have the potential to respond to the planned management. For example, a recent gully or recently incised stream is not suitable because it no longer has the ability for vegetation to influence channel stability and riparian functions. This will eventually return as the channel widens and develops the area

needed for a new floodplain and riparian vegetation inside the gully. Functional-at-risk reaches are often a higher priority for management and monitoring than are nonfunctional or properly functioning reaches.

3. Have the species present that will be needed to respond to management objectives and have suitable places for them to grow.
4. Respond similarly to similar reaches, if there are similar reaches in the unit. They should not be located on isolated atypical areas such as where trails enter or cross a riparian area, water gaps, "postage stamp" locations surrounded by willow thickets, etc.
5. Be characterized by existing stream survey or PFC assessment locations (if they meet the above criteria) because of the existence of historic photos and data. Other historic photo sites may also be suitable, if they meet the criteria.

**Critical Management Areas** – Critical management areas must be treated with special consideration because of inherent site factors, size, location, conditions, values, or significant potential conflicts among uses. It may be important to designate and monitor critical areas as key areas because they have a significant resource value or concern. However, critical areas may not be extensive in area and do not reflect the management of the entire grazing unit. Critical management areas may include:

1. Critical habitat for wildlife;
2. Areas having threatened or endangered species;
3. Highly erodible areas;
4. Isolated aspen patches; or
5. Riparian areas.

**Key Species** – These are often key forage species that indicate the degree of use of associated species or species which must,

because of their importance, be considered in the management program. Generally:

1. Key species should represent objectives and be a significant component of the potential desired plant community. The species selected should be those that respond to management. Key forage species should be ones that respond to grazing management
2. Key forage species should be palatable to the grazing animals during the planned season of use. (Very palatable plants that have low production potential should not be selected as key species. Species with low palatability or lower palatability than the preferred species should not be selected. These give a falsely high or low use reading, leading to under use or excessive use on the more palatable forage species.)
3. Key species should be perennial except on annual rangelands, and be selected after:
  - a) Choosing the key area and evaluating the present plant community.
  - b) Deciding the plant community or important plants that will reflect the objectives.
  - c) Giving due consideration to planned management, such as kinds and classes of grazing animals and season of use.
  - d) Thoroughly evaluating the factors affecting grazing distribution. If only one kind of animal grazes the pastures, a single plant species generally may suffice as the key species.



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## **Allotment Management Plan**

Leviathan S&G

Carson Ranger District

Humboldt-Toiyabe National Forest

Prepared by: \_\_\_\_\_ Date: \_\_\_\_\_  
**Rangeland Management Specialist**

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_  
**Grazing Permittee**

This Allotment Management Plan implements direction established in the 1986 Toiyabe National Forest Land and Resource Management Plan, as amended by the Sierra Nevada Forest Plan Amendment (2001 and 2004), and the Greater Sage Grouse Bi-State Distinct Population Segment Forest Plan Amendment (2016), and the 2020 FONSI and Decision Notice for the Leviathan-Loope Rangeland Project. This Allotment Management Plan is made part of your Term Grazing Permit in accordance with Section 8(a) Part 2 of that permit.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
**District Ranger**

## Introduction

The Leviathan S&G Allotment is located near the top of Monitor Pass (CA Hwy 89) and west of Hwy. 395 in Alpine and Mono Counties, California, and Douglas County, Nevada. It is adjacent to Bureau of Indian Affairs administered lands in Nevada, Bureau of Land Management (BLM), and other portions of the Humboldt-Toiyabe National Forest. The lands within Mono County are within the boundaries of the Bridgeport Ranger District (figure 2.). The legal description for this allotment is: T10N R21E, Sections 12, 24, 25, 26, 35, 36; T10N R22E, Sections 7, 17-21, 28-33; and T12N, R21E, Section 15, Mount Diablo Meridian. The allotment boundary is shown on Map 1. The Leviathan Allotment consists of one grazing unit totaling approximately 8,975 acres, of which approximately 8,797 acres are National Forest System lands. The remainder of these acres is comprised of private and BLM lands, and will not be managed under the permit. The highest point within the allotment is Leviathan Peak at 8,963 feet.

The Slinkard Fire originated in Slinkard Valley, CA by a lightning strike on August 29, 2017 and continued burning until September 11, 2017 (after sheep grazed the allotment). The fire burned 2,860 acres within the Leviathan Allotment boundaries, which is approximately 32% of the area. The portion that burned is located on the Bridgeport Ranger District, and the HTNF received Burned Area Emergency Response (BAER) funds to treat known invasive weed infestations and employ early detection rapid response techniques to new infestations post-fire. Furthermore, approximately 500 bare-root *Artemisia tridentata* seedlings were planted between Virgil-Connel Spring and California Spring at select sites in April 2018. Planting took place in early spring but was followed by a very dry and hot summer.

2017 grazing operations on the allotment were not affected because the fire occurred after use occurred. Forest Plan Amendments require rest from livestock grazing for 2 growing seasons post wildfire, and up to 3 seasons in Bi-State Sage grouse habitat. For the 2018 and 2019 grazing seasons, there was no reduction in authorized livestock numbers; however, there was a reduction in the number of days grazed and head months because rest was incorporated into the grazing authorizations for the eastern portion of the allotment that was burned. The operator avoided the burned area using proper herding practices. On-the-ground conditions will be evaluated prior to authorizing use within the burn for the 2020 grazing season

## Condition

Based on ecological monitoring, vegetation communities within the allotment are currently at a functioning-at-risk condition, except for mountain big sagebrush communities near Virgil Connel Spring, which are functioning. Meadow systems yield a disproportionate amount of early seral stage plants but show a more uniform ground cover in riparian systems; improved soil conditions also support the condition rating. Riparian areas show a stable to upward trend, and a stable apparent trend. Aspen communities show an apparent stable to downward trend; and upland communities show a stable to upward trend.

## Summary of Current Vegetation Conditions

Ecological condition for each dominant vegetation type across the Leviathan Allotment:

- Meadow systems are functioning-at-risk
- Upland vegetation communities are functioning-at-risk to functioning
- Aspen stands are functioning-at-risk

- Mountain brush communities are functioning
- Mountain mahogany communities are functioning
- Mixed conifer stands are functioning
- Noxious weeds are minimal

**Table 1: Acres of Community Types within the Leviathan Allotment.**

Allotment	Pinyon-Juniper	Conifer Forest/Woodland	Riparian	Aspen/Cottonwood	Upland				
					Sagebrush	Mountain brush & Mixed Scrub	Mountain Mahogany	Mixed Sage/Bitterbrush	Grassland
<b>Leviathan S&amp;G</b>	1,399.7	456.1	13.9	955.6	3,192.6	1,459.9	530.9	908	32.7
<b>% of Allotment</b>	16%	5%	<1%	11%	36%	16%	6%	10%	<1%

## Goals & Objectives and Desired Future Conditions

Livestock grazing will be authorized in a manner that will meet or move toward the following resource objective(s) and desired conditions in a timely manner. Desired conditions set forth in the land and resource management plan specific to livestock grazing and rangeland resources are: Goals for each resource are stated in broad, general terms looking from the present into the future. The desired future condition is stated as how the Forest should appear in the year 2030 if implementation of the Plan is properly achieved. (p. IV-1)

Management requirements necessary for achieving goals and objectives are referred to as “standards and guidelines.” These state the bounds or constraints within which management practices will be performed. Within this document, the terms “standard” and guideline” are interchangeable with no difference in meaning. The Forest-wide standards and guidelines described in the following section were developed to address public issues and management concerns; and to direct management practices in order to accomplish Forest-wide goals and objectives. (p. IV-13)

## Forest Plan Standards and Guidelines

Within the framework of the Toiyabe Forest Land and Resource Management Plan (1986) as amended, it is the desired future condition of the Forest and the District to:

- **USDA 1986 IV-26-27** -Achieve or maintain rangeland in satisfactory condition which is defined as: (1) having a resource value rating (RVR) of 50 or above for vegetation or other features; or (2) being in a mid-succession or higher class of ecological status; and (3) having a stable or upward trend in soil and vegetation.
- **USDA 1986 IV-26-** Have approved allotment management plans that incorporate objectives and guidelines to improve coordination with other resources;
- **USDA 1986 IV-26-** Strengthen the noxious weed control effort; and

- **USDA 1986 IV-26-** Provide forage for livestock production.
- **USDA 1986 IV-26-** Strive to achieve or maintain a minimum of 60 percent ground cover on upland rangelands with the exceptions of low sagebrush types, Wyoming big sagebrush types, crested wheatgrass seedings, pinyon/juniper types, and south facing sagebrush types on granitic slopes of the Sierra Nevada.
- **USDA 1986 IV-27-** Implement non-continuous use management systems on all livestock grazing allotments. When feasible, use a rest rotation system when significant range is in unsatisfactory condition.
- **USDA 1986 IV-26-** Conduct monitoring and evaluation in accordance with FSH 2209.21, Range Environmental Analysis Handbook, and the Nevada Rangeland Monitoring Handbook.
- **USDA 1986 IV-28-29-** Forage Utilization Standards obtained from the 1986 Forest Plan are to be used as maximum standards for the development of proper use criteria. In 2001 and 2004, the Sierra Nevada Forest Plan amended the Toiyabe Plan and provided new grazing standards for riparian areas. Design of management systems will include the specific utilization standards to be applied. These standards should be applied based on utilization of key plant species by key area. Soil disturbance may also be used to determine proper use and is often the best measure of proper use on sheep ranges and on granitic slopes.
- **USDA 1986 IV-30-** Proper use criteria will be established, in writing, for each unit of each grazing allotment. Proper use criteria are a mandatory part of each allotment management plan. Long-term trend studies are also mandatory to determine if proper use criteria are correct and to determine what is occurring in regard to range condition. Establishing proper use criteria requires Interdisciplinary (ID) team involvement. Proper use criteria define the permissible grazing level in the range unit or pasture.

## **Sierra Nevada Forest Plan Amendments**

The Toiyabe Forest Plan was amended by the Sierra Nevada Forest Plan Amendment (SNFPA) in 2001 and 2004 and includes additional direction related to desired conditions and livestock grazing within Riparian Conservation Areas (RCAs). Riparian Conservation areas are land allocations that are managed to maintain or restore the function of aquatic, riparian and meadow ecosystems (USDA 2001 ROD pp. A-7). RCAs generally include all vegetation within 300 feet of the bank full edge of a perennial stream and 150 feet from seasonally flowing streams.

**USDA 2004 ROD pp42-** Desired conditions for meadows within RCAs include maintaining the “ecological status of meadow vegetation in late seral condition” (50 percent or more of the relative cover of the herbaceous layer is late seral with high similarity to the potential natural community). Management direction related to meeting the desired condition includes the following Riparian Conservation Objectives (RCO):

**USDA 2004-RCO #5-120, pp. 65-** The SNFPA sets maximum utilization levels on forage use in meadows based on the grazing system being used on the allotment. For season-long grazing on meadows in early seral status, the SNFPA limits livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height). If the meadows are in late seral status

livestock utilization of grass and grass-like plants is limited to a maximum of 40 percent (or minimum 4-inch stubble height). Ecological status is to be determined by using Regional ecological scorecards and range plant list in regional range handbooks. If meadow ecological status is determined to be moving in a downward trend, grazing is to be modified or suspended.

**USDA 2004-RCO #5-120, pp. 65-** Under intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows require total rest from grazing until they have recovered and have moved to mid- or late seral status. Degraded meadows are defined as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion.

**USDA 2004-RCO #5-121, pp. 65-** Browsing is limited to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Livestock are to be removed from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation.

**USDA 2004-RCO #2-103 pp. 63-** Prevent disturbance to streambanks and natural lake and pond shorelines from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots.

## **Greater Sage-grouse Bi-State Distinct Population Segment Forest Plan Amendment**

Additional direction related to the desired habitat conditions and livestock management/grazing within the Bi-State Sage Grouse Distinct Population Segment (DPS) are outlined in the Greater Sage-grouse Bi-state DPS Forest Plan Amendment and Record of Decision. Desired conditions, and goals and objectives will be incorporated into the management of the Leviathan and Campbell-Loope Allotments. Grazing permits will include the standards and guidelines to include terms, conditions, and direction to move toward or maintain sage grouse habitat desired conditions. The allotments include lands within the Pinenut Population Management Unit. Management direction related to livestock grazing and sage grouse habitat management are as follows:

**RP-S-01:** Grazing permits, annual operating instructions, or other appropriate mechanism for livestock management shall include terms, conditions, and direction to move toward or maintain bi-state DPS habitat desired conditions.

**RP-G-01:** In bi-state DPS habitat, consider closure of grazing allotments, pastures, or portions of pastures, or managing the allotment as a forage reserve as consistent with maintaining sage-grouse habitat based on desired conditions as opportunities arise under applicable regulations, where removal of livestock grazing would enhance the ability to achieve desired bi-state DPS habitat conditions.

**RU-S-01:** Manage livestock grazing to maintain residual cover of herbaceous vegetation so as to reduce predation during breeding/nesting season (March 1 to June 30 critical disturbance period;

dates may shift 2 weeks back or forward in atypically dry or wet years based on observations of breeding/nesting activity).

**RU-S-02:** Manage livestock grazing in accordance with the utilization standards in this table.

Community Type	Percent Utilization of Key Species	Terms and Conditions
<b>Mountain Big Sagebrush</b>	<45% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Wyoming and Basin Big Sagebrush</b>	<35% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Black Sagebrush</b>	<35% herbaceous species; <35% shrub species	Livestock removed in 5 days of reaching utilization level
<b>Riparian and Wet Meadows</b>	<50% herbaceous species; <35% woody species (current year's growth); or average stubble height of at least 4 to 6 inches (depending on site capability and potential) for herbaceous riparian vegetation	Average stubble height 4 to 6 inches: Livestock removed in 5 days of reaching utilization level based on site; or (sequential action) no grazing from May 15 to August 30 in brood-rearing habitat

Table 2.

## Allotment Management

### Design Features

The Decision Notice for the Leviathan-Loope Rangeland Project included additional design features for resources specific to the Leviathan Allotment and are incorporated into the management of this allotment:

### *Soil and Watershed Resources*

- Avoid impacts to fragile riparian soils and vegetation, no bedding, resting or other concentrated livestock use would occur within .25 miles (440 yards) of a stream or other waterbody.
- Ground disturbing work such as digging soil to improve water developments, will occur in the fall, or when spring flows are low, and soils are dry and more durable.
- Development or improvement work at spring sites will be monitored by resource specialists to prevent undesirable impacts to resource values.

### *Wildlife and Aquatic Resources*

- A portion of the project area is located within the Pine Nut Population Management Unit (PMU) for Bi-state Sage Grouse and proposed critical habitat for bi-state sage grouse. There is no known nesting or lekking sites within or near the project area. As part of the Proposed Action, all pertinent standards and guidelines as described in the Record of Decision for the Greater Sage-grouse Bi-state Distinct Population Segment

Forest Plan Amendment (USDA 2016) will be followed to continue to attain desired habitat conditions for Bi-state sage grouse.

- All water developments will be designed and fitted with wildlife escape ramps that meet Bat Conservation International Standards (Taylor and Tuttle 2007).

### ***Sensitive and Rare Plants***

- Unoccupied potential habitat for rare plant species was discovered in the project area during surveys. If rare plants are documented in the project area in the future, plants will need to be flagged and avoided or otherwise protected as determined by the district or forest botanist.

### ***Noxious/Invasive Weeds***

- To avoid inadvertently transporting noxious weeds to other locations, livestock will not be authorized to graze or trail through known noxious or invasive weed populations.
- The permittees will be responsible for coordinating with the Forest Service immediately when new infestations of noxious or invasive weeds are discovered on their allotment.
- Equipment used to install or maintain water developments would be thoroughly cleaned prior to entering National Forest System lands to avoid inadvertent transport of noxious and invasive weed seeds.
- As per the Noxious Weed Order 36 CFR 261.58(t)/regional order 04-00-097, any hay that is brought onto the National Forest will be federally certified “Noxious Weed Free Forage.”
- Prior to arrival to the project area, sheep will either be quarantined, or fed weed free forage for at least 3 days.
- As part of the Carson Ranger District Weed Management Program, weed infestations located in the Leviathan-Loope Rangeland Project area will be mapped and treated on an annual basis.

### ***Cultural Resources***

- The AOI shall be reviewed to determine if additional cultural resource inventory is needed, and to ensure that cultural resource concerns are conveyed.
- Cultural resources near high use areas (watering and bedding locations) shall be monitored on a periodic basis to ensure standard resource protection measures are effective.
- If adverse effects to sites eligible or potentially eligible for inclusion in the National Register of Historic Places are identified in the future, additional protection measures will be required to prevent additional impacts.
- *Additional direction will be incorporated into this AMP once the Decision Notice is signed.*

### **Permitted Head Months and Season of Use**

The definition of a head month is the use and occupancy of the range by one animal for one month. For grazing fee purposes, it is a month’s use and occupancy of range by 5 sheep or goats (FSM 2230.5).



Table 3 displays the maximum occupancy based on the capacity (foraging) of rangelands within the allotment. In addition to managing grazing intensity and duration on allotment, establishing maximum occupancy with parameters will allow for greater flexibility in achieving short-term and long-term management objectives.

A maximum number of head months were analyzed and established in the Leviathan-Loope Rangeland Project. The Term Grazing Permit permits the maximum head months, or greatest amount of use that would be authorized on the Leviathan Allotment; however, because ecological conditions on most of the allotment are currently considered unsatisfactory (functioning-at-risk), the maximum of 4,416 head months would only be used when it is determined appropriate to meet the desired ecological conditions of the allotment. Stocking rates will be re-evaluated annually and adjusted when necessary to meet the desired ecological conditions and management objectives of this allotment. On average, use has consisted of 4-6 weeks and less than 700 head months (actual use data collected from 2011-2019).

The season of use dates would be permitted from May 15 to October 31 with the typical grazing season lasting one to two months. However, the actual grazing season would be determined annually based on range readiness conditions (i.e. weather, soil, vegetation) and within season utilization monitoring. To account for these seasonal fluctuations, seasons of use represent the earliest and latest allowable dates for livestock to be on the allotments.

**Table 3: Permitted Use in Term Grazing Permit 2020.**

Livestock			Period of Use		Grazing Allotment
Number	Kind	Class	From	To	
4,416 HM	Sheep	Ewes/lambs	5/15	10/31	Leviathan S&G

\*Grazing may occur within the range of May 15 through October 31, not to exceed 4,416 head months, and/or a maximum of 92 days grazed.

### **Grazing Management Strategies, Standards and Guidelines**

Grazing management for this allotment will consist of a deferred grazing strategy with periodic rest. This type of grazing system allows for the most efficient and non-impactive use of rangelands as pastures (or units) are rested for either a year or more at a time or deferred until the appropriate season for the plant community. The allotment consists of one grazing unit, and the sheep will graze the allotment counterclockwise one year, and clockwise the next year. Proper season of use will be directed at matching the timing of livestock grazing with the kind of plant community on the allotment, taking into consideration the long-term objectives for the range. Adjusting the season of use on pastures will allow plant species to be grazed at different phenological stages instead of being grazed at the same time every year. Grazing will continue at a reduced level (proper use criteria) until all water developments are properly functioning and the ecological condition is determined to be stable or on an upward trend. The tentative rotation schedule is shown in Tables 4 and 5.

**Table 4: Tentative Grazing Plan for 2020.**

Unit	On Date	Off Date	Days Use	Head Months	AUMs
Leviathan	July 1	August 20	51	1,358	407
<b>Total</b>			51	1,358	407

Permit is variable use numbers and dates. The dates are *tentative* and will most likely change and will be shown in the 2020 AOI. 810 ewes/lambs NTE 4,416 head months grazing clockwise and traveling south, southeast. Evaluate the east half of the allotment which burned in the Slinkard fire prior to authorizing grazing.

**Table 5: Tentative Grazing Plan for 2021.**

Unit	On Date	Off Date	Days Use	Head Months	AUMs
Leviathan			NTE 92	NTE 4,416	
<b>Total</b>			NTE 92	NTE 4,416	

Permit is variable use numbers and dates. The strategy is for grazing counter-clockwise traveling west, southwest to the east. Evaluate the east half of the allotment which burned in the Slinkard fire prior to authorizing grazing.

**The Leviathan-Loope Rangeland Project EA and Decision Notice consists of the following actions for the management of the Leviathan Allotment:**

12. Seasons of use may vary between May 15<sup>th</sup> and October 31<sup>st</sup>.
13. Permitted Use is not to exceed 4,416 head months, and/or not to exceed a maximum of 92 days grazed.
14. Dry ewes may be substituted for ewes with lambs at a conversion factor based on their weight at time of entry to the allotment (based on one AUM being equal to the forage requirement of a 125-pound ewe with a lamb less than 6 months of age).
15. Annual grazing strategies will be designed to incorporate one or more of the following guidelines:
  - No grazing in any one pasture or area twice in the same season
  - Vary the time of year livestock are in any one unit or area over several years
  - Provide periodic rest when needed
  - Limit the amount of time sheep spends in any area so as to minimize impacts
  - Provide adequate time for plant growth prior to grazing.
16. The allotment will be grazed using open herding in a once over pattern.
17. Salt/mineral tubs must be placed at least ¼ mile from water, meadows, trails, and roads used by the public. Salt will be removed from the allotment when sheep have left an area.
18. Herder's camp must always be kept clean.
19. All garbage and debris associated with managing sheep must be removed.
20. Dead livestock must be moved at least 100 yards from any campsite, live stream, spring, trail, or road.
21. Time spent in an area may vary depending on when utilization standards are met. It is the permittee's responsibility to monitor the utilization and move the sheep before standards are exceeded.
22. When selecting sheep bedding areas, look for the following areas:
  - f. Densely forested areas.
  - g. Rocky areas.
  - h. The toe slope of a hill: rocky, barren areas.
  - i. Sheep will not bed or noon in aspen stands or more than 3 days in the same place during the grazing season.

- j. See design feature for soils and watershed resources above.

### **Additional BMP's for noxious weed prevention and control practices**

- 6. For grazing allotments with existing invasive plant/noxious weed infestations, the annual operating instructions should include practices for preventing spread and for cooperative management of weeds. Prevention practices may include, but are not limited to:
  - k. Altering season of use
  - l. Exclusion
  - m. Activities to minimize ground disturbance
  - n. Preventing weed seed transportation
  - o. Maintaining healthy vegetation
  - p. Weed control methods
  - q. Revegetation
  - r. Inspection
  - s. Reporting
  - t. Education
- 7. Avoid or remove sources of invasive plant/noxious weed propagules to prevent new infestations and the spread of existing infestations. The following prevention practices may minimize transport of seed and other propagules into and within the allotment.
  - a. In units with existing weed infestations which are known to be susceptible to spread by livestock, schedule livestock use before seed-set or after seed has fallen.
  - b. If livestock are transported from a weed-infested area, annually inspect and treat allotment entry units for new weed infestations.
  - c. If pastures are infested to the degree that livestock grazing will either exacerbate the condition or contribute to weed seed spread, close pastures to livestock grazing. Designate those pastures as unsuitable range until weed infestations are controlled.
- 8. Maintain healthy, desirable vegetation that is resistant to weed establishment.
  - c. Through the annual operating instructions, manage the timing, intensity, duration, and frequency of livestock activities to maintain the vigor of desirable plant species and retain live plant cover and litter.
  - d. Manage livestock grazing on restoration areas to ensure that vegetation is well established. This may involve exclusion for a period of time consistent with site objectives and conditions. Consider practices to minimize wildlife grazing on the areas if needed.
- 9. Minimize disturbed ground conditions favorable for weed establishment.
  - a. Equipment used (including backhoe and trucks) to maintain and construct water developments must be thoroughly washed prior to entering the allotment and washed again prior to taking the equipment to another area within the allotment.

- b. Consider, for example, changes in the timing, intensity, duration, or frequency of livestock use; placement and occasional relocation of salt grounds; restoration or protection of watering sites; and restoration of bedding grounds, and other areas of concentrated livestock use.
  - c. Inspect known areas of concentrated livestock use, e.g., watering and bedding sites, for weed invasion. Inventory and manage new infestations.
10. Improve effectiveness of weed prevention practices through awareness programs and education. Promote weed awareness and prevention efforts among range permittees.
- c. Use education programs or annual operating instructions to increase weed awareness and prevent weed spread associated with livestock management practices.
  - d. To aid in their participation in allotment weed control programs, encourage permittees to become certified pesticide use applicators and provide herbicide and mapping assistance when appropriate.

## **Forage Utilization and Proper Use Criteria**

### **Allowable Use and Other Standards:**

Actual moves within the allotment are to be completed by the time that:

- a) The allowable use standard is reached on any of the key areas, or
- b) The scheduled off date occurs, whichever occurs first.
- c) In the case of more than one standard being applicable to a given area, the standard being reached first will dictate a move.

This will usually necessitate moving livestock one or more days prior to reaching the allowable use standard or the scheduled off date. Any livestock use occurring after the scheduled off date must be approved in advance by the Forest Officer and will be based on an estimate of forage remaining and the grazing extension checklist until allowable use standards are reached.

Proper use criteria are guides for managing livestock movement and for assessing forage use at the end of growing season. The assessment of proper use criteria determines if grazing maintains resources in an appropriate ecological condition for moving toward objectives. The proper use criteria are designed to manage livestock grazing at levels that would move the resources towards the desired conditions. The proper use criteria are not desired conditions, they are measurable limits on grazing that would allow the landscape features to meet or move towards desired conditions.

In general, the highest proper use rates for each habitat group are assigned to areas that are in functioning condition (Tables 6 and 7). Proper use at these levels is expected to maintain or move these areas toward functioning condition. Proper use rates for habitat groups that are in functioning-at-risk or non-functioning condition are lower than the functioning category. Proper use under these rates is expected to allow these habitat groups to move toward and become functioning.

Proper use criteria for the Leviathan Allotment was established based upon the most current information available regarding the conditions and trends of resources. Proper use criteria are based on Forest Plan established standards as amended, as well as review of scientific literature on grazing and its effect on vegetation under conditions (Leviathan-Loope Rangeland Project

2020). In general, the proper use criteria have been adjusted to more appropriately reflect levels of use that would protect resources and ensure stable and upward trends in vegetation and stream conditions. Proper use criteria would be re-evaluated and adjusted (if necessary) to the appropriate level to meet resource objectives. As displayed in table 6 and table 7 utilization levels are adjusted depending on the ecological condition of the range (non-functioning, functioning-at-risk, functioning). For example, if ecological conditions improve to satisfactory in upland shrubs (with the exception of BSSG requirements), utilization rates may be increased. Likewise, if conditions deteriorate, utilization levels would be lowered. Utilization measurements would be based on within-season triggers and end of the growing season conditions, and streambank disturbance would be based on a percentage of natural streambank stability. Table 8 provides a summary of the initial grazing strategy for Leviathan Allotment and includes utilizations levels lower than the maximum allowed due to the current ecological condition of the allotments.

**Table 6. Maximum forage utilization standards as described in the 1986 Toiyabe Forest Plan<sup>1</sup> the Sierra Nevada Forest Plan Amendment<sup>2</sup>, and the Greater Sage Grouse Bi-State DPS Forest Plan Amendment<sup>3</sup>. Standards for 'Non-Functioning' condition class derived from ID team assessments to adequately protect resources<sup>4</sup>. Condition class terms are derived from the forest plans and are used interchangeably. Where pertinent, changes in utilization standards from Forest Plan Amendments are shown. Standards that are less restrictive are superseded by more stringent standards.**

Management System	Vegetation Type	Maximum Percent Utilization					
		GRASSORFORB			SHRUB		
		Condition Class			Condition Class		
		Unsatisfactory <sub>1</sub> (Early Seral <sub>2</sub> ); (Non-Functioning <sub>4</sub> )	Unsatisfactory <sub>1</sub> (Early-mid Seral <sub>2</sub> ); (Functioning-at-Risk)	Satisfactory <sub>1</sub> (Late Seral <sub>2</sub> ); (Functioning <sub>3</sub> )	Unsatisfactory <sub>1</sub> (Early Seral <sub>2</sub> ); (Non-Functioning <sub>4</sub> )	Unsatisfactory <sub>1</sub> (Early-mid Seral <sub>2</sub> ); (Functioning-at-Risk)	Satisfactory <sub>1</sub> (Late Seral <sub>2</sub> ); (Functioning <sub>3</sub> )
Rest Rotation or Deferred	Aspen, Sagebrush, Mountain brush and Grassland,	35% <sub>4</sub>	45% <sub>1</sub>	45% <sub>3</sub> (Toiyabe FP=55%)	20% <sub>4</sub>	35% <sub>3</sub> (Toiyabe FP=40%)	40% <sub>2</sub> (in non BSSG* habitat)  35% <sub>3</sub> (within *BSSG habitat) (Toiyabe FP=50%)
	Riparian/ Meadow	20% <sub>4</sub>	30% <sub>2</sub> -Minimum 6" stubble ht. (Toiyabe FP=55%)	40% <sub>2</sub> -Minimum 4" stubble ht. (Toiyabe FP=65%)	10% <sub>4</sub>	20% <sub>2</sub> (Toiyabe FP=25%)	20% <sub>2</sub> (Toiyabe FP=35%)

\*BSSG= Bi-state sage grouse

**Table 7. Ecological Conditions and Proposed Proper Use Criteria by Habitat Group.**

UNITS WITHIN THE ALLOTMENTS	HABITAT GROUP/PROPER USE CRITERIA									
	ALPINE			RIPARIAN/MEADOWS				UPLANDS (brush, aspen, non-meadow grasslands)		
	Ecological Condition	Allowable Utilization		Ecological Condition	Allowable Utilization		Streambank Alteration <sup>3</sup>	Ecological Condition	Allowable Utilization	
		Woody	Herbaceous		Woody (willow,	Herbaceous			Woody	Herbaceous
Leviathan Allotment										
Leviathan Unit	N/A	N/A	N/A	FR	20%	30%	20%	FR	35%	40%

**Table 8. Summary of Initial Grazing Strategy for the Leviathan Allotment**

ALLOTMENT	ACRES	PERMITTED HEAD MONTHS	PERMITTED SEASON OF USE	UTILIZATION UPLANDS		UTILIZATION RIPARIAN MEADOWS		STREAMBANK DISTURBANCE	GRAZING STRATEGY
				Herbaceous	Woody	Herbaceous	Woody		
Leviathan	8,975	NTE 4,416	May15th-October 31st	40%	35%	30%	20%	20%	Deferred

## Herbaceous Species:

The Forest applies utilization standards to both riparian and upland herbaceous species. Trigger points for proper use in riparian and upland areas are from 0-30% for herbaceous vegetation depending on current condition. Proper use, based on existing grazing management should be checked against trend data to determine if the current proper use is appropriate or may need to be adjusted (Swanson et al, 2006).

## Utilization Standards for Herbaceous Vegetation

**Table 9: Utilization standards for herbaceous species.**

Units within the allotment	Habitat Group/ Proper Use Criteria			
	RIPARIAN/MEADOWS <sub>2</sub>		UPLANDS (non-meadow grasslands) <sub>1, 3</sub>	
	Ecological Condition	Herbaceous	Ecological Condition	Herbaceous
Leviathan	FR/ Early Seral	30%	FR/ Early Seral	40%

1. Toiyabe Land and Resource Management Plan (USDA 1986); 2. Sierra Nevada Forest Plan Amendment (USDA ROD 2004);

3. BSSG (USDA ROD 2016)

The following is an excerpt from the Sierra Nevada Forest Plan Amendment (USDA ROD 2004):

“In meadows that are in early seral status (an early stage of succession in a plant community or vegetation type, generally characterized by plant species that are adapted to colonizing disturbed areas with a high proportion of bare soil) livestock utilization of grass and grass-like plants must be limited to 30% (or minimum six-inch stubble height).”

### Woody Species:

Woody riparian species play an important role in some riparian systems, providing shade, nesting and foraging habitat for wildlife, and roots and stems for roughness and streambank stability. Other woody species provide important wildlife habitat in uplands. Many of these species are palatable to livestock and/or wildlife. Excessive use of woody species can prevent regeneration and limit density, height, canopy volume, or habitat quantity and quality. Specific use levels on woody species are used as triggers for livestock movement. Use levels for woody species should not be used as a long-term resource objective. Trigger points for livestock on woody species are from 0-20%, depending on current condition.

### Utilization Standards for Woody Vegetation

**Table 10: Utilization standards for woody species.**

Units within the allotment	Habitat Group/ Proper Use Criteria			
	RIPARIAN/MEADOWS (aspen, willow) <sub>2</sub>		UPLANDS (mountain brush communities, bitterbrush) <sub>1,3</sub>	
	Ecological Condition	Woody	Ecological Condition	Woody
Leviathan	FR/ Early Seral	20%	FR/ Early Seral	35%

1. Toiyabe Land and Resource Management Plan (USDA 1986); 2. Sierra Nevada Forest Plan Amendment (USDA ROD 2004); 3. BSSG (USDA ROD 2016)

The following is an excerpt from the Sierra Nevada Forest Plan Amendment (USDA ROD 2004):

“In riparian areas, browsing on mature riparian shrubs (including willow and aspen) is not to exceed 20% of the annual leader growth and is not to exceed more than 20% of individual seedlings.”

### Soil Disturbance/Streambank Alteration:

Stable soils and streambanks maintain soil productivity, decrease rates of erosion, improve water quality, and aquatic habitat. Trigger points for livestock on soil disturbance and/or streambank disturbance are from 0-20%, depending on current condition.



### Disturbance/Alteration Standards for Soils and Streambanks:

To avoid impacts to fragile riparian soils and vegetation, no bedding, resting, or other concentrated livestock use will occur within .25 miles of a stream or other water body.

**Table 11: Standards for Streambank Disturbance.**

Units within the allotment	Habitat Group/ Proper Use Criteria	
	Streambank Disturbance <sub>2</sub>	
	Ecological Condition	Streambank Alteration
Leviathan	FR/ Early Seral	20%

1. Toiyabe Land and Resource Management Plan (USDA 1986); 2. Sierra Nevada Forest Plant Amendment (USDA ROD 2004);  
3. BSSG (USDA ROD 2016)

The following is an excerpt from the Sierra Nevada Forest Plan Amendment (USDA ROD 2004):  
“Disturbance of Meadow-associated streambanks and natural lake and pond shorelines is not to exceed 20% of the stream reach or 20% of the natural lake or pond shoreline.”

### Range Improvements

The permittee is responsible for the maintenance of the water developments on the Leviathan S&G Allotment. These improvements will be maintained to the following standards set forth by the Forest Service, and Natural Resource Conservation Service (NRCS) if used for the design of water developments. Backhoe, or other mechanized equipment work will occur in the fall, or when spring flows are low, and soils are dry and more durable. To prevent weed spread, equipment will be washed prior to entering the allotment.

**Table 12: Water Improvements within the Leviathan S&G Allotment.**

Improvement	Location
California Spring and Troughs	Option 1: 11S 0276003 by 4285237 Option 2: 119° 34'23.162" by 38° 40'46.718"
High Peak Spring and Troughs	11S 0271962 by 4286654
Big Spring Stock Pond (spring and pond)	11S 0273967 by 4285643
125WPD09 Spring, Pond	11S 0271481 by 4282709
Virgil Connell Spring (Catchment Basin)	11S 0274832 by 4284261
89 Stock Pond (Catchment Basin)	11S 0273235 by 4283717
Monitor Pass Stock Pond (Catchment Basin)	11S 0272296 by 4283901
125WPD10 (Catchment Basin)	11S 0271298 by 4283619

Indian Springs/Pond	11S 0274874 by 4288281
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**Table 13: Water Improvements within the Leviathan S&G Allotment additional information.**

<b>Improvement</b>	<b>Proposed Action</b>
<b>California Spring and Troughs</b>	Reconstruction, or new Improvement
Option 1: UTM: 11S 0276003 by 4285237 Option 2: 119°34'23.162" by 38°40'46.718"	Option 1: Replace the existing non-functioning troughs with new troughs, staying within the original footprint.  Option 2: Develop a new trough location which would bring the troughs closer to the spring source.
	<u>Common to both options:</u> Replace the CMP at the spring source, install a solar or generator-powered pump, install new pipe (above ground) approx. 600-1000 feet; install 20-60ft. of water troughs with gravel apron underneath, and an outlet pipe. Backhoe will be used to level ground for trough placement, and gravel apron. Wildlife ramps will be placed in troughs.
<b>High Peak Spring and Troughs</b>	Reconstruction
UTM: 11S 0271962 by 4286654	Install a vertical CMP at spring source, install solar or generator-powered pump, and up to 200ft. of pipe, install 20-60ft. of sheep troughs (4 troughs currently), outlet pipe, a gravel apron, and wildlife ramps. Backhoe will be used to level ground for trough placement, and gravel apron.
<b>Big Spring Stock Pond (spring and pond)</b>	Maintenance
UTM: 11S 0273967 by 4285643	Spring source with a dugout reservoir/pond that is maintained to hold water. Use backhoe for future maintenance as needed.
<b>125WPD09 Spring, Pond</b>	Maintenance
UTM: 11S 0271481 by 4282709	Spring source with dugout reservoir/pond to hold water. Rocks line the banks. Use backhoe for future maintenance as needed.
<b>Virgil Connell Spring (catchment basin)</b>	Maintenance
UTM: 11S 0274832 by 4284261	Catchment reservoir/pond to hold water from spring runoff. Use backhoe for future maintenance as needed.
<b>89 Stock Pond (Catchment basin)</b>	Maintenance
UTM: 11S 0273235 by 4283717	Catchment reservoir/pond to hold water from spring runoff. No historical spring source. Use backhoe for future maintenance as needed.

<b>Monitor Pass Stock Pond (catchment basin)</b>	<b>Maintenance</b>
UTM: 11S 0272296 by 4283901	Catchment reservoir/pond to hold water from spring runoff. No historical spring source. Use backhoe for future maintenance as needed.
<b>125WPD10 (catchment basin)</b>	<b>Maintenance</b>
UTM: 11S 0271298 by 4283619	Catchment reservoir/pond to hold water from spring runoff. No historical spring source. Water hauling location with temporary troughs. Use backhoe for future maintenance as needed.
<b>Indian Springs/Pond</b>	<b>Maintenance</b>
UTM: 11S 0274874 / 4288281	Catchment reservoir/pond to hold water from spring runoff. Historically dug out the spring source, so now the spring is dry. Use backhoe for future maintenance as needed.

## Monitoring

Monitoring has the dual purpose of ensuring compliance with the design features and proper use criteria for an allotment and determining whether the current management of the allotment is maintaining or moving the area toward functioning condition. Implementation and focused effectiveness monitoring are necessary to determine when or if management changes should be made and to guide the direction that those changes take.

The following monitoring activities will be carried out by the grazing permittee and the Forest Service during or at the end of the grazing season. Results will be shared with the permittee to improve livestock management. All monitoring information collected by the permittee and the Forest Service will be included in the 2210 allotment file.

## Key Areas

Because the acreage of this allotment covers a vast area, soil and vegetation parameters cannot be monitored on every part of the allotment. The “key area concept” would be used for short-term and long-term monitoring efforts. A key area is a relatively small portion of rangeland that because of its location, grazing or browsing value, and/or use serves as a monitoring and evaluation site that is representative of conditions in the larger area. A key area guides the general management of the entire area of which it is a part of and would reflect the overall acceptability of current grazing management over the range. Key areas can be a short segment of stream or a small upland area. A key area can also be an entire stream reach or large upland basin.

The initial key area locations for short-term and long-term monitoring for each allotment are listed below; however, the locations of key areas for monitoring may be changed or adjusted over time as conditions change or new information becomes available.

Key areas are selected by utilizing the Forest Service approved procedures for selecting key areas and key species located in the Nevada Rangeland Monitoring Handbook, Second Edition, Appendix A. “A key area is a relatively small portion of a unit selected as a representative

monitoring point for measuring change in vegetation or soil and the impacts of management. It is chosen because of its location, use, and value. They should serve as representative samples for long- and/or short-term monitoring.” Key areas include but are not limited to:

**Table 14: Established key areas for implementation or short-term monitoring.**

Benchmark or Landscape Area Name/Location
High Peak Meadow area: 11S 272082 by 4286056
North of the Big Spring area: 11S 274855 by 4286700
Top of Monitor Pass area: 11S 272155 by 4283596

### **Allotment Inspections /Compliance Monitoring**

Compliance monitoring ensures livestock are distributed in the correct units and areas authorized for grazing. It also includes improvement maintenance inspections. Allotment inspections will occur throughout the grazing season. Results will be shared with the permittee to improve livestock management.

### **Annual/Implementation Monitoring (Short-Term)**

Short-term monitoring would be used to determine if the actions described in the Leviathan-Loope Rangeland Project EA and DN, Proposed Action are being implemented as planned and are meeting the proper use criteria and design criteria. It could also be used to conduct limited tracking on ecological condition and trend. Short-term monitoring encompasses a wide variety of monitoring activities.

Overall monitoring of conditions on the Carson Ranger District, including the project area, occurs every year. This kind of monitoring is based on general observations of rangeland conditions by the Forest Service and reports from other visitors to the project area. This work is done in conjunction with rangeland management, as well as other resource management activities (i.e., fisheries, wildlife, archaeology, etc.). This information would be evaluated to determine if additional monitoring emphasis is desirable in a particular allotment.

Short-term monitoring would involve the following actions:

- Annual monitoring includes utilization and stubble height monitoring in key areas. Data will be used to determine when livestock must be moved from one unit to another and to make any necessary adjustments to livestock numbers and/or season of use. Final utilization and stubble height readings will be taken at the end of the grazing season each year. Annual monitoring will follow accepted Forest Service Protocols.
- The Forest Service would conduct short-term monitoring (including within season trigger and proper use criteria observations) on every allotment where grazing is authorized that year- at the very least an ocular estimate will be done. Annual operating instructions (AOIs) and terms and conditions would be monitored for compliance.
- Within season and end-of-season utilization would be monitored using the annual monitoring methodologies included in, but not limited to, the Utilization Studies and Residual Measurements (Interagency Technical Reference, 1734-3, 1996), the Nevada

Rangeland Monitoring Handbook, third edition (2018), and other BLM technical references such as Multiple Indicator Monitoring (2017) and Proper Functioning Condition assessments (BLM technical references).

- Proper use criteria monitoring for end-of-season utilization would be conducted in key areas. As discussed above, key areas are locations that are representative of conditions in the larger area. Monitoring locations could vary from year to year because livestock do not use the same place in the same way every year.
- When feasible, permittees, other rangeland users, and interested parties would be invited ahead of time to participate in the short-term monitoring efforts. However, monitoring inspections may occur at any time as opportunities present themselves.
- The responsibility for ensuring livestock moves occur on time remains with the permittee. To ensure they meet this responsibility, permittees would conduct monitoring of proper use criteria and compliance with the AOIs, which could include design features, improvement maintenance, and other standards, guidelines, and terms and conditions in the grazing permits.
- Permittees, other rangeland users, and interested parties would be encouraged to share any short-term monitoring data they collect. Permit administrators would review this monitoring information to ensure compliance and prepare for the next grazing season. Monitoring information may include documentation of utilization measurements, photos, or other relevant documentation.
- Inspections, monitoring, and continual dialogue with permittees (throughout and immediately following the grazing season) provide an ongoing feedback loop for the need to maintain or change management on the ground. Monitoring results for each allotment will be reviewed with the permittee and documented in following year's AOI.

### **Effectiveness Monitoring (Long-Term)**

Long-term monitoring would be used to determine if the proper use criteria and grazing management guidelines included in the DN and the AMP are effective in moving resources towards functioning ecological conditions and ensuring an upward or stable trend in resource conditions. Long-term monitoring would gauge the success of allotment management by comparing evaluations on rangeland condition and trend against previous evaluations. Trend is characterized as “toward potential,” “away from potential,” or “static” (an old SRM term) or “direction of change over time” (FSH 2209.21). The appraisal of trend is simply the recognition of the nature, rate, and direction of ecological change (USDA FS 1951).

For this allotment, future ecological condition assessments would be based on the attributes that have a cause and effect relationship with adjustments in livestock management. Data on all attributes would be collected when monitoring is conducted so the general condition of the area can be determined. After the monitoring data has been collected, attributes that are not in functioning condition would be individually evaluated to determine if domestic livestock grazing is affecting them. This evaluation would be documented as part of the long-term monitoring report. If the evaluation does not identify a causal link between the authorized grazing activities and an attribute that is not in functioning condition, that attribute would not be considered in the project-level assessment of ecological condition or in a determination to adjust proper use criteria. Examples of situations where an attribute would not be used include conifer encroachment into

aspen stands, pinyon-juniper encroachment into uplands, and water quality attributes affected by other activities.

Current conditions and trends have been identified in the Leviathan Allotment by using a variety of data and monitoring techniques which include ecology plots, nested frequency studies, and point intercept studies. Scorecards, including the Sierra Nevada Riparian Field Guide and the Matrices, as well as Ecological Site Descriptions were used to evaluate the data and guide in the identification of current ecological condition.

Long-term monitoring sites are representative of the dominant soil and vegetation types on the allotments- key areas. Long-term monitoring locations may be added or modified over time to adjust to new and/or updated information (FSH 2209.21, 42). Table 15 identifies all long-term plot locations and study type completed across the Leviathan Allotment.

The long-term monitoring sites would be re-evaluated approximately every 5-8 years to determine rangeland condition, using the appropriate scorecards discussed above. This time frame was chosen because measurable changes in conditions occur slowly in the project area. More frequent monitoring is unlikely to result in any information that documents that the conditions have changed. Approved monitoring methods and protocols are listed in FSH 2209.21, chapter 40 and include photograph points, nested frequency, point ground cover samples, line intercept, plant density, and riparian protocols described in Cowley and others (2005) and Winward (2000). To determine actual trend, the long-term monitoring sites would be reevaluated using the appropriate parameter (composition, cover, etc.) and methodology (nested frequency, point-intercept, photo points, etc.). The condition and trend information, along with other data would be used to evaluate any needs for change in management, including adjustments to the proper use criteria or season of use.

Permittees would be encouraged, but not required, to participate in long-term monitoring and to collect data on their allotment(s). Data collection could be done in cooperation with the Forest Service or entirely on their own. Any data collected by the permittees would be collected using Forest Service approved methodologies or protocols. The Forest Service would fully review all data collected by the permittees to determine the quality and reliability of the data. All data collected would be stored in the allotment monitoring files (2210) at the Carson Ranger District.

Long-term monitoring using the Matrices and other appropriate protocols to measure trend would generally occur on a 5-8-year cycle. If the methods for evaluating condition or trend have changed by the time of the monitoring, adjustments would be made to ensure that data can be “cross-walked” between the different methodologies so actual long-term trend can be determined.

Condition and trend long-term monitoring is used to determine if the area is meeting or moving toward desired conditions. Long-term trend data will be used to evaluate timing, intensity, frequency, and management of grazing. Annual triggers may be adjusted in order to meet long-term desired conditions. Long-term monitoring will follow accepted Forest Service protocols. The following table shows the long-term plots established in 2007 and 2013.

**Table 15: Effectiveness or Long-term monitoring plot locations for the Leviathan Allotment.**

Plot Code	Plot Name	Date	State	Datum	Zone	Northing	Easting	Study Type
97781	Monitor 2 A&B	6/26/2007	CA	NAD83	11	274357 274205	4285065 4285325	Nested Frequency
13350	Big Spring Meadow	7/30/2013	CA	NAD83	11	274004	4285607	Nested Frequency
10123	Indian Springs	8/13/2013	CA	NAD83	11	274907	4288261	Point Intercept
27097	Company Meadow	7/01/2007	CA	NAD83	11	271385	4282621	Nested Frequency
13351	Aspen Sunday	8/04/2013	CA	NAD83	11	272719	4286397	Point Intercept
63220/ R-220- 221	Leviathan	7/08/2013	CA	NAD83	11	272102	4284641	Point Intercept
82355	Virgil Connel	8/17/2013	CA	NAD83	11	274728	4284140	Nested Frequency

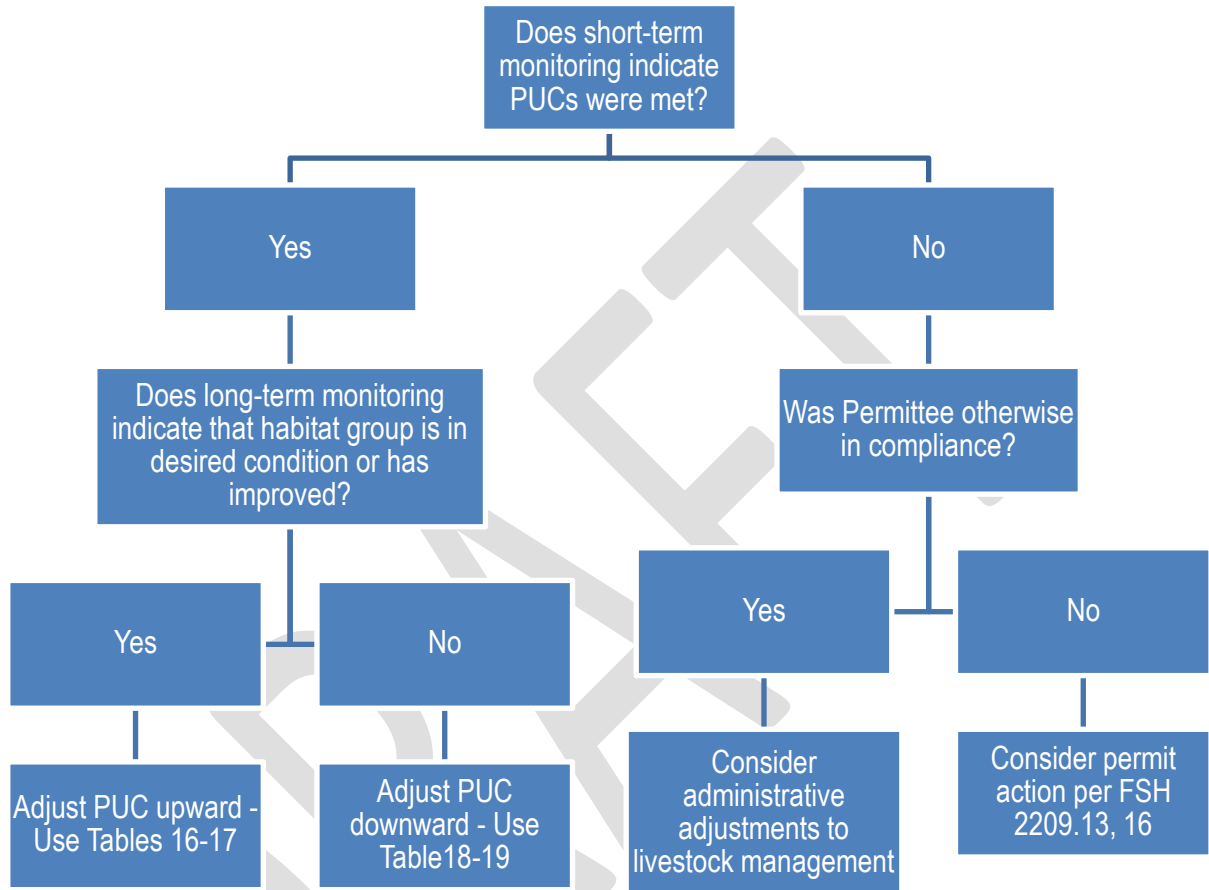
## Management Adjustments Based on Monitoring

Based on the successes or failures observed through short-term and long-term monitoring, adjustments to grazing strategies would be made. As discussed above, short-term monitoring would occur annually, and long-term monitoring would generally occur on a 5-8-year cycle.

The information obtained through this monitoring effort would be evaluated to determine if management of an allotment should be adjusted. The flowchart included below displays how monitoring results would be used to determine whether adjustments to grazing management are warranted and what kind of adjustments would be made. See figure 1. If adjustments are necessary, they would be included in the next year's AOIs.

As the flowchart indicates, monitoring results could lead to several different kinds of adjustments to livestock grazing or management. In some circumstances, prescribed adjustments would be made to the proper use criteria if ecological conditions decline or improve. Other situations would call for administrative adjustments, including a temporary reduction on within season triggers and proper use criteria, or a temporary reduction in the number of livestock on the allotment. New grazing improvements, such as fencing or water developments, would require additional environmental analysis. Finally, if the permittee is not in compliance with the terms of their permit, administrative action on the permit may be warranted. The administrative actions are included in this discussion to provide a complete picture on how the monitoring results would be applied.

**Figure 1. Process Used to Determine Adjustments Based on Monitoring.**





**Table 16. Proper Use Adjustments When Long-Term Monitoring Indicates Desired Condition or Improvement in Ecological Condition of Aspen, Sagebrush, Mountain Brush, and Grassland Vegetation Communities.**

<b>Aspen, Sagebrush, Mountain Brush, and Grassland</b>	<b>Desired Condition Management Objective</b>	<b>Existing Condition and Trend</b>	<b>End of Season Indicator</b>	<b>Threshold of Concern</b>	<b>Adaptive Management if Threshold of Concern is Reached</b>	<b>Monitoring</b>
<b>Herbaceous Vegetation</b>	<b>Satisfactory/ Functioning ecological condition</b>	Functioning	45% utilization	Long-term monitoring indicates functioning condition	Continue allowing up to 45% utilization	Utilization measured at end of growing season
		Functioning-at-risk	45% utilization	Long-term monitoring indicates functioning condition	Allow up to 45% utilization	
		Non-functioning	35% utilization	Long-term monitoring indicates functioning-at-risk condition	Allow up to 45% utilization	
<b>Woody Vegetation</b>	<b>Satisfactory/ Functioning ecological condition</b>	Functioning	40% utilization (35% for Bi-State Habitat)	Long-term monitoring indicates functioning condition	Continue allowing up to 40% utilization (35% for Bi-State Habitat)	Browse use measured at end of grazing season
		Functioning-at-risk	35% utilization	Long-term monitoring indicates functioning condition	Allow up to 40% utilization (35% for Bi-State Habitat)	
		Non-functioning	20% utilization	Long-term monitoring indicates functioning-	Allow up to 35% utilization	

				at-risk condition		
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**Table 17. Proper Use Adjustments When Long-Term Monitoring Indicates Desired Condition or Improvement in Ecological Condition in Riparian and Meadow Vegetation Communities.**

<b>Riparian / Meadow</b>	<b>Desired Condition Management Objective</b>	<b>Existing Condition and Trend</b>	<b>End of Season Indicator</b>	<b>Threshold of Concern</b>	<b>Adaptive Management if Threshold of Concern is Reached</b>	<b>Monitoring</b>
<b>Herbaceous Vegetation</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/late seral	40% utilization (min. 4" stubble height)	Long-term monitoring indicates functioning condition	Continue allowing up to 40% utilization (min. 4" stubble height)	Utilization measured at end of growing season
		Functioning-at- risk/early seral	30% utilization (min. 6" stubble height)	Long-term monitoring indicates functioning condition	Allow up to 40% utilization (min. 4" stubble height)	
		Non- functioning/early seral	20% utilization	Long-term monitoring indicates functioning- at-risk condition	Allow up to 30% utilization (minimum 6" stubble height)	
<b>Woody Vegetation</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/late seral	20% (SNFPA) utilization	Long-term monitoring indicates functioning condition	Continue allowing up to 20% utilization	Browse use measured at end of grazing season
		Functioning-at- risk/early seral	20% (SNFPA) utilization	Long-term monitoring indicates functioning condition	Allow up to 20% (SNFPA) utilization	

		Non-functioning/early seral	10% utilization	Long-term monitoring indicates functioning-at-risk condition	Allow up to 20% (SNFPA) utilization	
Streambank Alteration	Proper Functioning/Late Seral ecological condition	Functioning	20% alteration	Long-term monitoring indicates functioning condition	Continue allowing up to 20% alteration	Alteration end of time in unit
		Functioning-at-risk	20% alteration	Long-term monitoring indicates functioning condition	Allow up to 20% alteration	
		Non-functioning	10% alteration	Long-term monitoring indicates functioning-at-risk condition	Allow up to 20% alteration	

**Table 18. Proper Use Adjustments When Long-Term Monitoring Indicates Decline in Condition of Aspen, Sagebrush, Mountain Brush, and Grassland Vegetation Communities.**

Aspen, Sagebrush, Mountain Brush, and Grassland	Desired Condition Management Objective	Existing Condition and Trend	Existing End of Season Indicator	Threshold of Concern	Adaptive Management if Threshold of Concern is Reached	Monitoring
Herbaceous Vegetation	Satisfactory/Functioning ecological condition	Functioning	45% utilization	Long-term monitoring indicates functioning-at-risk condition	Remain at 45% utilization, consider additional actions	Utilization measured at end of growing season
		Functioning-at-risk	45% utilization	Long-term monitoring indicates non-functioning condition	Reduce to 35% utilization	

		Non-functioning	35% utilization	Long-term monitoring indicates non-functioning condition	Remain at 35% utilization, consider additional actions	
Woody Vegetation	Satisfactory/Functioning ecological condition	Functioning	40% utilization (35% in Bi-State Habitat)	Long-term monitoring indicates functioning-at-risk condition	Reduce to 35% utilization	Browse use measured at end of grazing season
		Functioning-at-risk	35% utilization	Long-term monitoring indicates non-functioning condition	Reduce to 20% utilization	
		Non-functioning	20% utilization	Long-term monitoring indicates non-functioning condition	Remain at 20% utilization, consider additional actions	

**Table 19. Proper Use Adjustments When Long-Term Monitoring Indicates Decline in Condition in Riparian and Meadow Vegetation Communities.**

Riparian / Meadow	Desired Condition Management Objective	Existing Condition and Trend	Existing End of Season Indicator	Threshold of Concern	Adaptive Management if Threshold of Concern is Reached	Monitoring
Herbaceous Vegetation	Proper Functioning/Late Seral ecological condition	Functioning/Late Seral	40% utilization (min. 4" stubble height)	Long-term monitoring indicates functioning-at-risk condition	Reduce to 30% utilization (min. 6" stubble height)	Utilization measured at end of growing season
		Functioning-at-risk/Early Seral	30% utilization (min. 6"	Long-term monitoring indicates non-	Reduce to 20% utilization	

			stubble height)	functioning condition		
		Non-functioning/Early Seral	20% utilization	Long-term monitoring indicates non-functioning condition	Remain at 20% utilization, consider additional actions	
<b>Woody Vegetation</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/Late Seral	20% (SNFPA) utilization	Long-term monitoring indicates functioning-at-risk condition	Remain at 20% utilization	Browse use measured at end of grazing season
		Functioning-at-risk/Early Seral	20% utilization	Long-term monitoring indicates non-functioning condition	Reduce to 10% utilization	
		Non-functioning/Early Seral	10% utilization	Long-term monitoring indicates non-functioning condition	Remain at 10% utilization, consider additional actions	
<b>Streambank Alteration</b>	<b>Proper Functioning/Late Seral ecological condition</b>	Functioning/Late Seral	20% alteration	Long-term monitoring indicates functioning-at-risk condition	Continue allowing up to 20% alteration	Alteration measured at end of time in unit
		Functioning-at-risk/Early Seral	20% alteration	Long-term monitoring indicates non-functioning condition	Reduce to 10% alteration	

		Non-functioning/Early Seral	10% alteration	Long-term monitoring indicates non-functioning condition	Remain at 10% alteration, consider additional actions	
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As is demonstrated by figure 1, the process of making adjustments based on monitoring begins with consideration of the results from short-term monitoring. If short-term monitoring indicates that the proper use criteria (PUC) are being met, the next question is whether long-term monitoring indicates that the ecological conditions have improved or declined. If conditions have improved, the adjustments described in tables 16 and 17 would be applied. If conditions have declined, the adjustments described in tables 18 and 19 would be applied.

If short-term monitoring reflects that the PUC are being exceeded, this indicates different problems are occurring and requires different approaches to address them. In this situation, there is a need to consider whether the permittee is otherwise in compliance with the terms of their permit. For example, if the permittee is adhering to stocking levels, moving livestock as required, and maintain the range developments as required, this suggests that there may be a flaw in the design of the grazing strategy. In these circumstances it may be appropriate to make an administrative adjustment to the grazing strategy. Additionally, if a meadow is determined to have >10% bare ground and active erosion, total rest from livestock grazing will occur until it is moved to mid to late seral (SNFPA 2001).

However, if the PUC are being exceeded and the permittee is having other compliance issues, this indicates poor performance on the part of the permittee. In this situation, the appropriate response is to consider action against the permit as described in FSH 2209.13, 16.

### **Possible Management Tools further included in the 2020 DN**

Adaptive management actions may be implemented as long as they are consistent with existing NEPA decisions and/or the administrative authority of the Forest Service. The administrative authority of the Forest Service is described in Title 36 of the Code of Federal Regulations, part 222; and in Forest Service Manuals and Handbooks. Additional NEPA analysis would not be required. Adaptive management actions may be implemented singly or as a set of management actions. Short-term actions will be implemented through the AOI. Modifications to the AMP and/or term grazing permit should be considered where monitoring shows that these actions need to be continued in the long-term or are implemented repeatedly or consistently over time.

Management adjustment actions should be applied where:

- Monitoring shows management objectives have not been achieved or that trend towards achieving desired conditions is not improving.
- Annual indicators of grazing use or grazing standards are not met.
- Climatic events, fire, flood or uses and activities detrimentally impact resource conditions and a modification of grazing use is needed to provide for recovery of the site.

The following list describes the probable actions that will be considered and implemented under adaptive management. However, it is not intended to exclude other actions which may be authorized by the grazing permit or under authority of 36 CFR 222, FS Manuals and Handbooks, and other laws and regulations as they exist or may be enacted.

### **Changes in law or regulations**

Modify the terms and conditions of a permit to conform to changes in law, regulation, executive order, development or revision of an allotment management plan, or other management needs.

### **Season of use, numbers, kind, or class of livestock**

- Modify the season of use, numbers, kind, or class of livestock allowed on the allotment to be grazed under the permit because of resource condition or trend, utilization patterns, or permittee request.
- Adjust the season of use for the allotment or areas within an allotment to reduce grazing impacts through changing the length or duration of use; reduce or eliminate grazing impacts during periods where plants or other resources are most susceptible to damage, or avoid conflicts with other uses such as during periods of high recreation use.
- Adjust the season of use to avoid grazing impacts or conflicts with critical resource needs of T&E species and other wildlife.
- Adjust the season of use at the request of the permittee to provide a better fit to his/her ranch operation.
- Adjust the season of use to take advantage of the availability of additional forage through extending the grazing season.
- Adjust the grazing season in response to seasonal variations in climate and productivity.
- Adjust authorized or permitted livestock numbers during all or a portion of the grazing season to match grazing use to resource conditions and productivity.
- Adjustments to stocking and season of use may be considered jointly or separately as appropriate.

### **Grazing Rotation and Management System**

Alteration of the sequence of pasture use within a grazing season or over a sequential period of years, the timing or season of use, the period or length of use, grazing intensity within a pasture, deferment or rest from grazing use, etc.

### **Management Practices**

Modification to management practices including timing, duration, grazing intensity, salting, herding, and using temporary electric fencing. This includes a range of management and herding practices that vary according to conditions and use that are found on individual grazing allotments. Modification of grazing use may be appropriate to prevent or manage conflicts with other uses such as dispersed recreation, coordinate with other management activities such as timber harvest and forest regeneration, or mitigate conflicts or impacts to other resources. Examples include management of impacts to roads and trails, herding practices around developed recreation sites, use of grazing as a tool for noxious weed management and site preparation for reforestation, provide for maintenance or restoration of aquatic and riparian processes, functions, and beneficial uses, management of line camps, fire and noxious weed prevention, etc.

### **Rest (temporary closure to grazing for a full year)**

Rest the allotment or areas within the allotment for a specific period of years or on periodic rotation where monitoring shows that trend towards achieving desired conditions are not stable or improving. This

may also be implemented where fire, flood, etc. detrimentally impact resource conditions or where treatment activities require a period of rest to provide for recovery of the site. If this occurs, specific recovery criteria for when grazing will be allowed should be specified.

### **Unauthorized Areas**

Grazing may not be allowed in areas within an allotment where desired resource conditions cannot be met while sustaining any grazing use. This may include an identification of specific areas within an allotment where livestock grazing will not be allowed.

### **Additional grazing parameters**

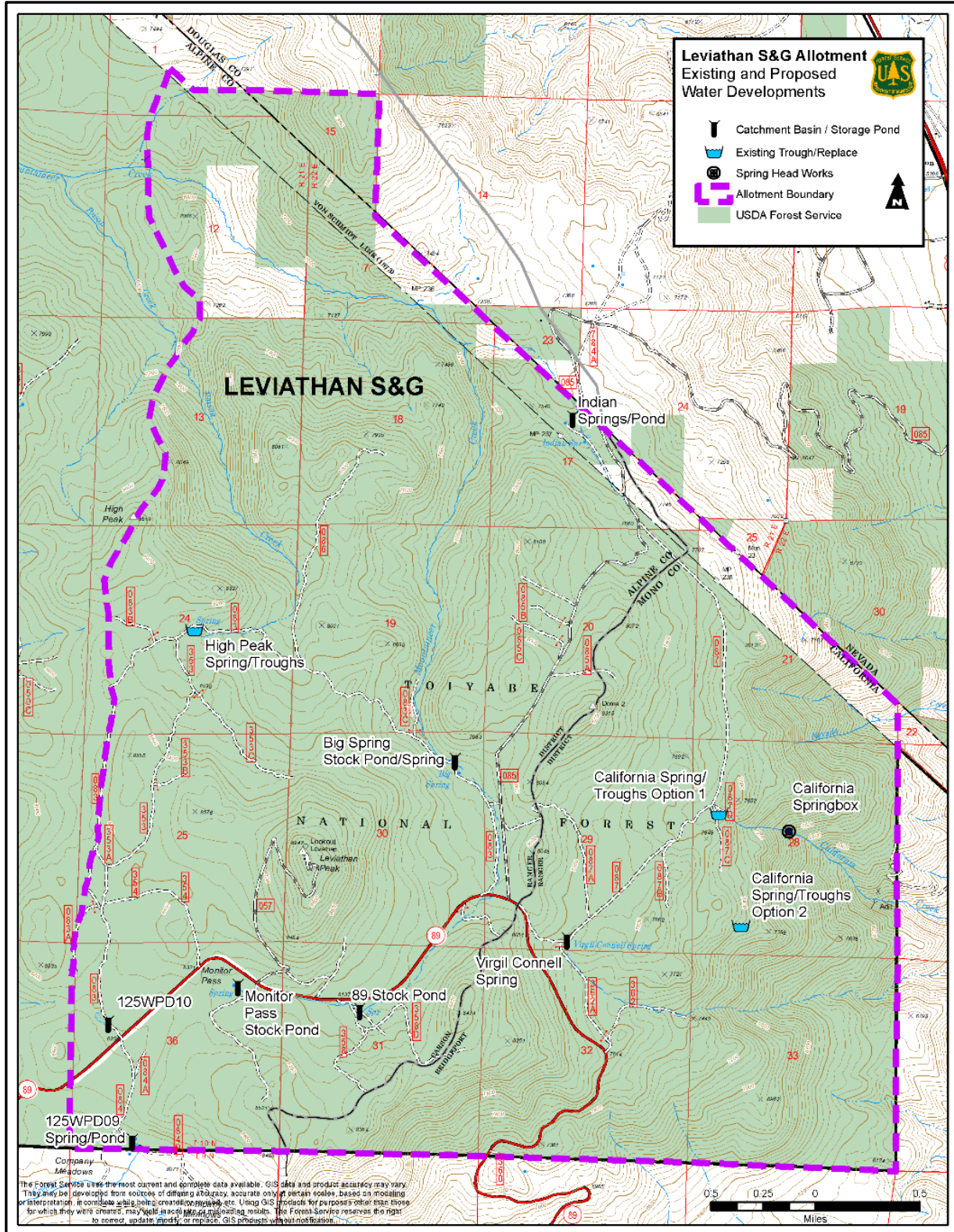
Implementation of additional grazing indicators or triggers or modification of existing parameters may be identified as needed to facilitate achievement of objectives and desired conditions. Annual indicators or triggers generally include: forage utilization limits, woody species utilization limits, streambank disturbance limits, soil disturbance limits, herding practices, etc.

### **Range Improvements – Structural and Nonstructural**

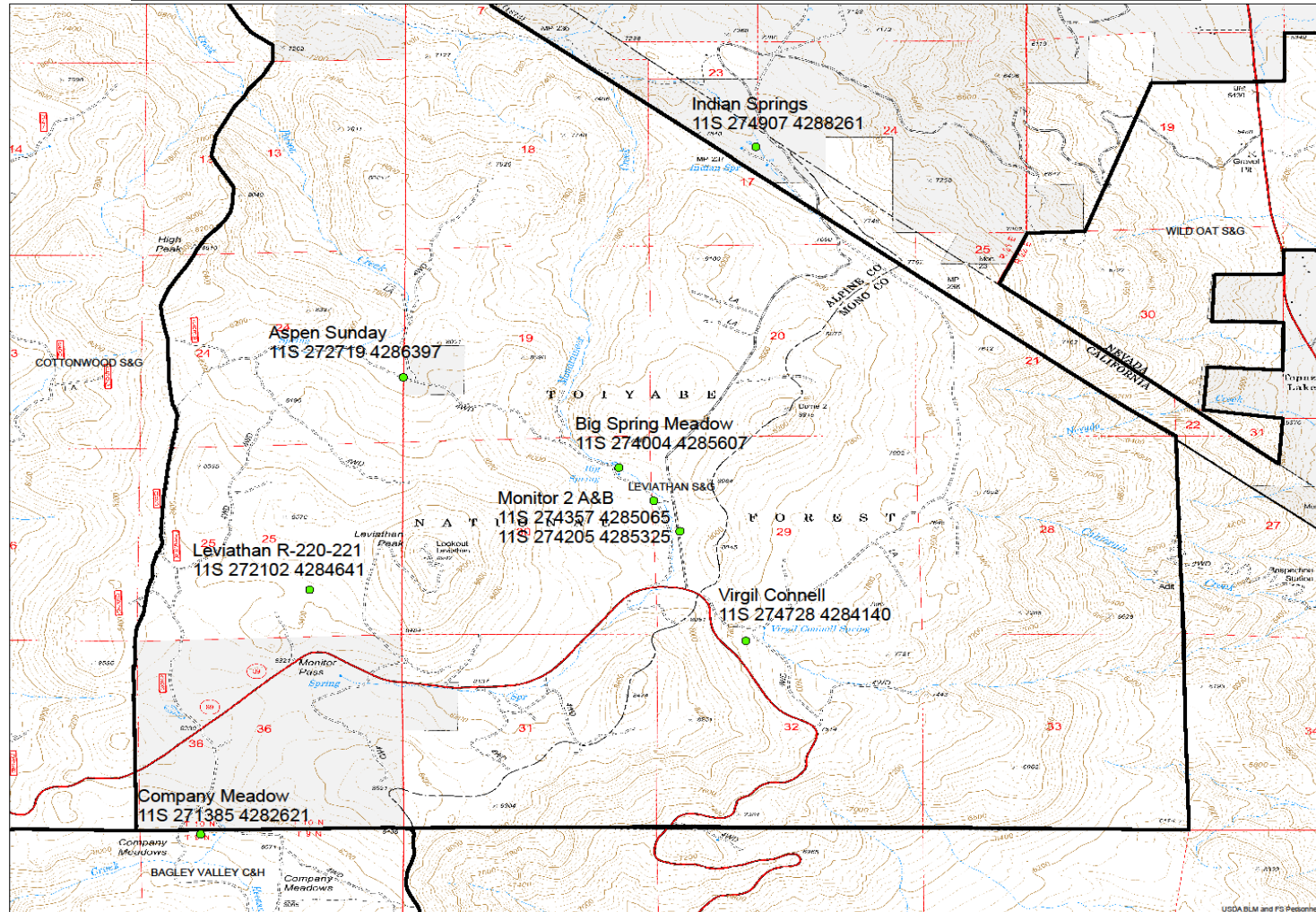
Actions include construction of water developments, fences, corrals and other permanent livestock handling facilities, trails, bridges, prescribed fire, noxious weed treatment, seedings, aspen stand treatments, sagebrush manipulation, etc. These actions may be proposed as adaptive management actions. Additional NEPA analysis will be required for these activities unless they are currently covered under existing NEPA analyses such as noxious weed management.



**Map 1: The Leviathan S&G Allotment boundary with water developments.**

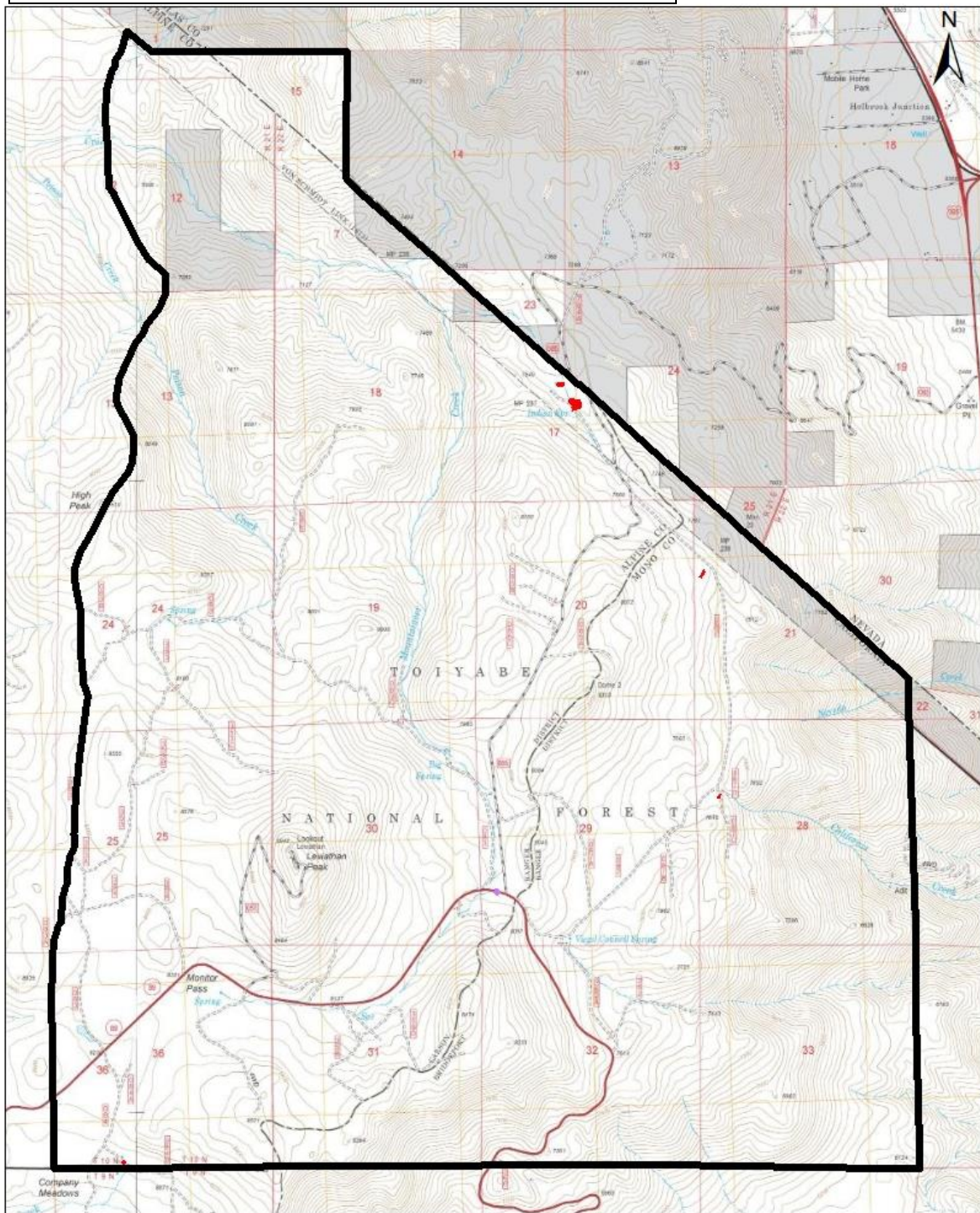


**Map 2: Long term monitoring plot locations within Leviathan S&G.**





**Map 3. Known weed infestations within Leviathan S&G**



Leviathan-Loope Rangeland Project: Noxious and Invasive Weeds Inventory

- Leviathan Allotment
- CIAR4
- ON AC

0 0.5 1 Miles

May by C. Ghiglieri, 3/15/2019

## **APPENDIX F – PROCEDURES FOR SELECTING KEY AREAS AND KEY SPECIES**

**Key Areas** – A key area is a relatively small portion of a unit selected as a representative monitoring point for measuring change in vegetation or soil and the impacts of management. It is chosen because of its location, use, and value. It is assumed that key areas, if properly located, will reflect the current management over similar important areas in the unit. They should serve as representative samples for long- and/or short-term monitoring (e.g., range conditions, trends, seasonal degrees of use, resource production, etc.). Key areas may be selected to represent a particular plant community, a specific ecological site, or some other significant portion of a management unit. Rangeland managers, livestock operators, and others who know the range should cooperatively select key areas based on management objectives. Key areas for long-term monitoring should also be used for short-term monitoring. To select a key area:

1. Consult standards and guides and land use and activity plan objectives. Use a vegetation map, aerial photo, soil survey, ecological site inventory, and whatever other useful information is available for the allotment. Use these to determine soils, ecological sites, ecological status, and/or state and risk of transition, if possible. Map vegetation types in the allotment or pasture, if possible. Key management areas should be located where the ecological situation is well understood. They should not bridge two or more ecological sites. Soil taxonomy must be confirmed in the field because soil inclusions lead to differing potentials within the same ecological site (e.g., sandy surface textures produce more perennial grass than finer soil surface textures).
2. Relate key area locations to allotment specific objectives. To do this, gather the Standards and Guidelines; Land Use plan goals and objectives; and any allotment specific goals and objectives from allotment management plans or other pertinent documents. The attributes of the objectives(s) monitored must be present on the area selected.
3. Refine objectives for each key area at the time they are set up in the field based on potential to represent management objectives. Consider the management plan, including triggers and end-of-season indicators.
4. Overlay use pattern map, water locations, and vegetation map together on a base map. Look for the most productive soils and sites with the highest use. Heavy or moderate use areas targeted for improvement in the plan and that are no farther than a mile from water are good places to put a key area (closer than 1 mile in a small pasture). Slight to light use areas do not tell much unless they are used to compare trend or production between heavy or moderate and slight use areas. A key area should represent an area that provides a significant amount, but not necessarily the greatest amount, of available forage in the pasture. This can be ascertained from an evaluation of the utilization and ecological site maps, together with an on-site examination.
5. Choose area(s) representative of the suitable seasonal range or use area. Two or more key areas may be needed for large pastures, pastures that have very rough topography or widely spaced water, various areas where animals tend to locate, areas where different kinds of animals graze, or where the pasture is grazed at different seasons. One key area may represent more than one pasture only if they are in the same grazing system with similar ecological sites, conditions, topography, water,



treatments, etc. Large, unfenced allotments may require many more key areas than implied above.

6. Determine the plant community potential. The site must have the potential to improve or decline. That is, there must be sufficient plants of the key species (those plants identified in management objectives) that an increase is predicted from the management plan and enough that they could decline if management does not achieve objectives or does not work or get implemented correctly. Within an ecological site, the area between abundant and sparse vegetation of the key species is often the best place to establish studies. For example, between abundant and sparse fourwing saltbush in the Sandy Loam 5–8" p.z., Ecological Site of MLRA 29-A change in abundance of key species will show up quickly. Whereas, sparsely populated areas that may have crossed a threshold have little or no potential to improve vegetation and may only go downward in trend. A study placed in the center of a patch of abundant or very little fourwing will take years to show change. It may be necessary to establish a study in such areas if a new water source is to be developed in it or if livestock management changes and this will influence the plant community. Studies in healthy rangeland can also be used for comparison areas.
7. Do not establish a key area in a small, atypical location.
8. Establish key areas in sites that herbivores prefer.
9. Ensure that key areas are accessible to grazing animals because of favorable factors influencing livestock distribution. Areas remote from water or having limited accessibility may be suitable for comparison areas but should not be selected as key areas.
10. Avoid water sources, trails, corrals, historic salt grounds, shade, and other

concentration areas. And, stay away from roadsides or other disturbances.

11. Where multiple herbivore (wild and domestic) use is significant, select key areas as needed.
12. Confine monitoring studies on a key area within the boundary of a single soil, single land form, and single plant community or ecological site. The Key Area Location Form included in this appendix is an example for recording the location and specific selection criteria.
13. Consider the season of use and class of animal because diet preferences change by season, kind, and class of animal.
14. Establish new key area(s) and discontinue reading old key areas if they do not address management objectives. This can happen when the pattern of grazing use is significantly modified because of a difference in season of use, kinds or classes of grazing animals, pasture size, water supplies, or other factors affecting grazing distribution or the management plan.

**Designated Monitoring Areas** – In riparian zones, areas selected for short- and long-term monitoring may be called designated monitoring areas (DMAs) (Cowley and Burton 2005). In riparian areas, key, critical, or designated monitoring areas should:

1. Represent management concerns within the riparian area as reflected by riparian PFC assessments, management plans, and especially management objectives (e.g., be associated with spawning areas for listed fish, if spawning habitat is targeted by recovery plans).
2. Have the potential to respond to the planned management. For example, a recent gully or recently incised stream is not suitable because it no longer has the ability for vegetation to influence channel stability and riparian functions. This will eventually return as the channel widens and develops the area

needed for a new floodplain and riparian vegetation inside the gully. Functional-at-risk reaches are often a higher priority for management and monitoring than are nonfunctional or properly functioning reaches.

3. Have the species present that will be needed to respond to management objectives and have suitable places for them to grow.
4. Respond similarly to similar reaches, if there are similar reaches in the unit. They should not be located on isolated atypical areas such as where trails enter or cross a riparian area, water gaps, "postage stamp" locations surrounded by willow thickets, etc.
5. Be characterized by existing stream survey or PFC assessment locations (if they meet the above criteria) because of the existence of historic photos and data. Other historic photo sites may also be suitable, if they meet the criteria.

**Critical Management Areas** – Critical management areas must be treated with special consideration because of inherent site factors, size, location, conditions, values, or significant potential conflicts among uses. It may be important to designate and monitor critical areas as key areas because they have a significant resource value or concern. However, critical areas may not be extensive in area and do not reflect the management of the entire grazing unit. Critical management areas may include:

1. Critical habitat for wildlife;
2. Areas having threatened or endangered species;
3. Highly erodible areas;
4. Isolated aspen patches; or
5. Riparian areas.

**Key Species** – These are often key forage species that indicate the degree of use of associated species or species which must,

because of their importance, be considered in the management program. Generally:

1. Key species should represent objectives and be a significant component of the potential desired plant community. The species selected should be those that respond to management. Key forage species should be ones that respond to grazing management
2. Key forage species should be palatable to the grazing animals during the planned season of use. (Very palatable plants that have low production potential should not be selected as key species. Species with low palatability or lower palatability than the preferred species should not be selected. These give a falsely high or low use reading, leading to under use or excessive use on the more palatable forage species.)
3. Key species should be perennial except on annual rangelands, and be selected after:
  - a) Choosing the key area and evaluating the present plant community.
  - b) Deciding the plant community or important plants that will reflect the objectives.
  - c) Giving due consideration to planned management, such as kinds and classes of grazing animals and season of use.
  - d) Thoroughly evaluating the factors affecting grazing distribution. If only one kind of animal grazes the pastures, a single plant species generally may suffice as the key species.

DRAFT